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ABSTRACT

The organization, functions, and work of the Research Institute of Physical Culture and Health, and the Research Unit for Sport and Physical Fitness, both functioning at the premises of the Foundation of Physical Culture and Health in Jyvaskyla, Finland, are discussed. Research papers which have been presented at international congresses during 1978 are included to show the focuses of different research projects being conducted at the Foundation. The publication closes with abstracts on the reports published in the Institute's publication series. (JD)

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FOREWORD

The purpose of this publication is to throw light on the research and information dissemination of the Research Institute of Physical Culture and Health in Jyväskylä. Our research activities at the moment cover six projects. The organization and functions of the Institute will be first described. The on-going investigations will be introduced with a brief summary and then certain reports on each project will be presented. The reports are actually papers given by our researchers in international scientific congresses during 1977. Finally the activities of the Institute's information department will be described. The publication is closed with abstracts on the reports published in the Institute's publication series.

Majority of the Institute's studies have been published in Finnish, which means that this report represents only a part of the Institute's publications. Because, however, it gives an overall picture of the research activities and information services of our Institute, we take the liberty of calling it the Year Book of the Institute, which will be published in this form for the very first time.

DEDICATED TO
PEKKA KIVIAHO
9.12.1938 - 25.10.1977

Risto Telama

SCIENTIFIC WORK IN THE RESEARCH INSTITUTE OF PHYSICAL CULTURE AND HEALTH

1. INTRODUCTION

The Research Institute of Physical Culture and Health was established in 1970 by the Foundation for Promotion of Physical Culture and Health. Its aim is to produce, acquire and pass on information connected with the health and welfare of man. In order to implement these aims work at the Institute has progressed along three fronts: research proper, service work and information service (see figure 1). Research at the Institute has been carried out in close collaboration with the Sports and Physical Fitness Research Station and the departments at the Faculty of Physical and Health Education and some other departments at the University of Jyväskylä.

The work of the Research Institute of Physical Culture and Health is financed by the Ministry of Education with the exception of service research. The research has been done on the premises of the Faculty of Physical and Health Education at the University of Jyväskylä, whereas the Information Service operates from the Jyväskylä University Library. There have been plans for a research institute building. In recent years there have been two people employed full time in the information service, and 3-5 researchers and 2-4 other members of staff engaged in research.

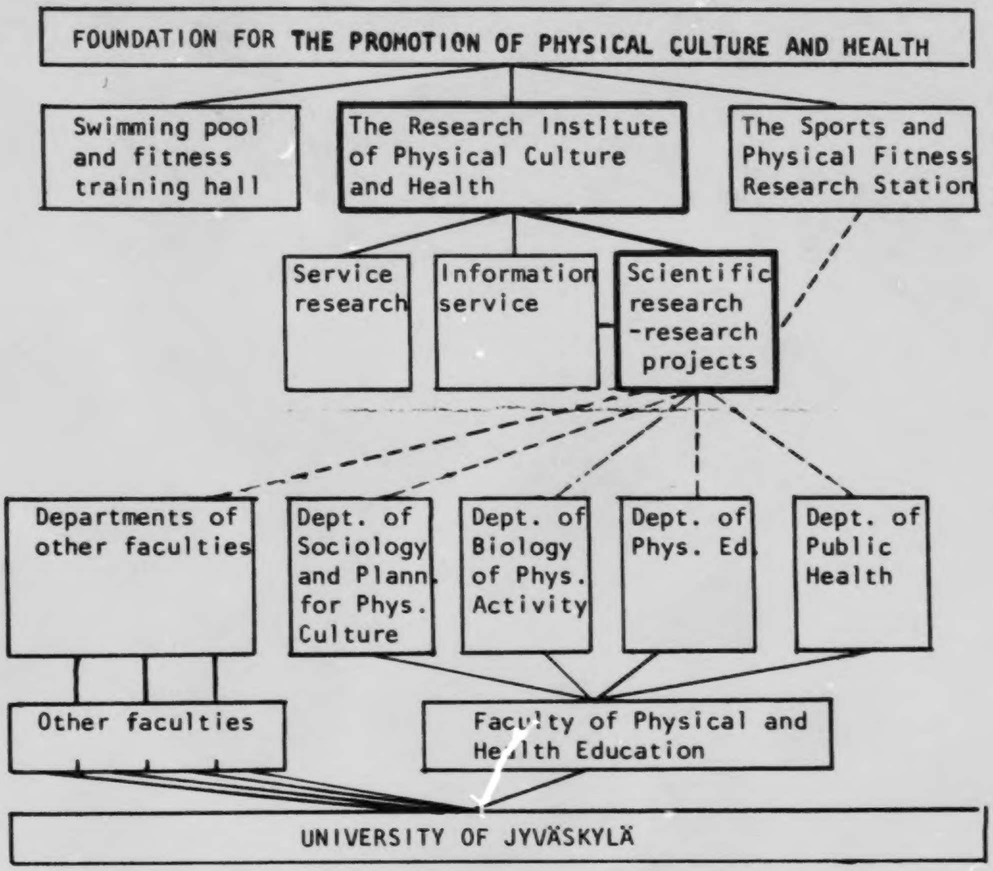
FOUNDATION FOR THE PROMOTION OF PHYSICAL CULTURE AND HEALTH
Swimming pool and fitness training hall
The Research Institute of Physical Culture and Health
The Sports and Physical Fitness Research Station
Service research
Information service
Scientific research -research projects
Departments of other faculties
Dept. of Sociology and Plann. for Phys. Culture
Dept. of Biology of Phys. Activity
Dept. of Phys. Ed.
Dept. of Public Health
Other faculties
Faculty of Physical and Health Education
UNIVERSITY OF JYVÄSKYLÄ

FIGURE 1. Organization and collaboration of the Research Insititute of Physical Culture and Health.

The most important fields covered in the Insitute's research are the structure and functions of physical culture, study of the population's sporting behaviour and its conditions, physical education and socialization for sport, and the connections between physical activity and health.

At present the research in the Institute is concentrated on the study of the physical activity and motivation for sports among adult people and, on the other hand, on the problem areas of physical education and socialization. There are three main research projects going on: 1) research on physical education of preschool children, 2) research on school physical education, and 3) research on the population's sporting behaviour.

In addition there are three other large research projects which will soon be completed: 4) socialization into sport involvement (an international study), 5) top athletics as a content of life (an international study), 6) METELI-project: Working conditions, state of health and physical activity in the machine industry.

Service research at the Institute has chiefly comprised the making of investigations and plans for the use of various bodies and has been financed by the client. The service research department has made e.g. a functional plan for a sports college, a plan for school sports facilities, and sports plan for a town with the associated investigation.

One of the aims of the Institute is information service. The Information Service of the Institute is responsible and takes charge of information service in physical education and sports sciences under the concern of Ministry of Education. In Finland, information is collected, selected, documented and relayed of foreign and Finnish publications and, respectively, to foreign countries of Finnish publications. Information is mainly disseminated as reference lists, some times as abstracts, and often as literature reviews in Finnish periodicals. Information is selected and disseminated on the basis of scientific main areas priorized by a state body.

During the year of 1975, the Institute has started with a publication series of its own under the heading of "Reports of Physical Culture and Health". At the end of 1977, twenty reports have been published.

1. RESEARCH PROJECT ON PRESCHOOL PHYSICAL EDUCATION

The research project on preschool physical education was started in 1973 and it will for the most part come to an end in 1978. Its main objective has been to create scientific basis for the development of preschool physical education in Finland and especially within the daycare system. The project is closely connected with preschool development, which has been taking place in Finland in the 1970's. The Act on children's daycare was passed in 1973. Ever since the system of children's daily care and the training of daycare personnel have increased. More attention is paid to the development of teaching contents, e.g. in the field of physical education, within preschool on a national level.

The research project on preschool physical education is by nature multi-scientific. It emphasizes among others developmental psychological and early pedagogical knowledge. The project includes three extensive phases of research. The first wide problem area deals with the development of measuring and evaluation methods in children's development. In the pilot studies, carried out during the early stages, measuring methods for motoric development and motoric basic readinesses were developed and tried out. The development has started with children in the ages of 6-7 years and later with 1-6 year-olds as well. The development of measuring methods was preceded by an extensive theoretical analysis of preschool children's motoric and personality development. Furthermore the project has included the development of measuring methods for preschool children's physical activity. The methods included e.g. the use of pedometer, interviews and teacher ratings. The methods have been tried out in pilot studies, which have revealed empirical data on 1-7 year-old Finnish children.

In 1976 the project acquired a new research method, which could be called the action method. It includes cooperation with preschool personnel as regards the contents and forms of preschool physical education.

The study has been carried out in the form of preschool-year long pedagogical-psychological experiments. Simultaneously children's development has been both evaluated and followed.

The last phase of the project will include the writing of a pedagogical handbook on preschool physical education in collaboration with researchers, kindergarten teachers' further trainers and kindergarten teachers in practical work. The contents of the handbook will be grouped according to age-group prerequisites (over and under 3 year-olds). It will include among others national movement games, which suit to preschool recess movement, morning exercises, outings, and weekly teaching and action units. Special attention is paid to the group of 1-4 year-olds with regard to movement games. Furthermore the handbook will include information on the physiological, motoric and personality development of children, sport and game equipment as well as on the planning of teaching for different age groups.

The research project on preschool physical education has been carried out in close collaboration with the Department of Psychology, University of Jyväskylä.

Helena Siren-Tiusanen

THE MEANING OF PHYSICALLY ACTIVE PLAY AND MOVEMENT GAMES IN PRESCHOOL PHYSICAL EDUCATION

IV International Congress of ISSP,
Prague, 3-8.10.1977

1. BACKGROUND

Finnish preschool education lacks an integrated program of education and instruction. Main attention has been given to the definition of educational objectives. Preschool physical education has, however, a relatively long historical tradition in Finland. The first gymnastics guide for kindergartens was published as early as 1930 (Pesola 1930). After that several other books have been published (Koskimies 1953, 1958, 1962, 1966, 1977). Their physical education contents are mainly programmes in which movement is based on fairy tales and rhythmic games.

At the moment it is topical to study and examine what physical education contents and instructional methods are suitable to children at different age and developmental levels. It is necessary to extend current views of contents of physical education. Physical education should be seen as a funtion which permeates the daily pedagogical process in preschool education. This means that besides the weekly instruction on physical activities and exercises different movement games come to occupy an important position in preschool education.

Since 1973 the Research Institute of Physical Culture and Health at Jyväskylä has been carrying out a research project on preschool physical education under the supervision of Mr. Isto Ruoppila, Professor of Developmental Psychology. Its main objective is to create scientific basis for the development of preschool physical education in Finland.

One of the sub-areas of the project has been the study of the psychological characteristics of children's physically active play as well as its forms and signifinance for motor development and physical education. In addition to theoretical analyses, empirical data have been collected on the physical activity of preschool children and on movement games as its central forms. Research methods have included the use of pedometer, two-level observation (a cross-sectional observation of a whole group of children and the longitudinal observation of individual children) (Björklid-Chu 1973) as well as interviews of kindergarten teachers. This paper deals both with the results of theoretical analyses and some preliminary empirical findings.

2. THEORETICAL FRAME OF REFERENCE: MEANING AND FORMS OF MOVEMENT GAMES

According to Vygotsky (1976) the play-development relationship can be compared to the instruction-development relationship, but play provides a background for changes in needs and in consciousness of a much wider nature. Play contains all developmental tendencies in a condensed form and in it are formed the conscious motives of child behavior. According to Vygotsky play is the source of child development and creates the zone of proximal development.

Play is of particularly great significance for the development of the motivational domain of child's personality and also for the arousal of interest in motion (Watkinson & Wall 1977). The child practises in it new physical and mental abilities and integrates them into his behavior (Husdorf 1974, Piaget 1962). Physically active games can serve the development of motor abilities such as speed and strength (Keller 1976). Modern research on play distinguishes five main types of play: function games, role games, construction games, rule games and didactic games. When the play of children is left to spontaneity the children turn under normal conditions more to this than that kind of play, the result being one-sided play habits and play-interests after a certain time. They may, in their turn, lead to one-sidedness and deficiences in the contracted by making use of didactic games, because they provide possibilities to direct the activities of children, without regimenting them, in a purposeful, planned and systematic way (Otto 1976). From the point of view of preschool physical education the most important types of didactic games are funtion games and rule games.

The main types of play cannot unambiguously be related to certain age levels, because children's play is largely influenced by the external conditions of development including education and psychological characteristics created by it. There are, however, developmental sequences and age-level emphases, which should be taken into account in the contents and methodics of preschool physical education.

2.1. Funtional movement games

Funtional play is among the earliest of the children's plays. Its origin is considered to be the joy on action, the child's awareness of his new powers and his orientation reflex. Function games occur throughout the whole childhood whenever some new performance or behavior is building up (Husdorf 1974, Piaget 1962). Any game which makes use of recently acquired skills will amuse the child (Millar 1968, p. 110). The dominant period of function games occurs just when the early learning of several basic motor readinesses (running, jumping, throwing, etc.) and the collection of first experiences in them takes place in the child's motor development as, for example, Winter (1975) describes the period between 1 and 3.5 years. The child enjoys then greatly the mere process of activity. At this stage the child's behavior and play is situation-determined. There exists a union of perception and motor affecting reaction. Each perception is to the child a stimulus to activity (Vygotsky 1976). Indirect instruction through the organization of environmental conditions is very important for the child's motor development and physical education at this stage.

Millar (1968) assumes that functional play is related to the development of return regulation of the child's behavior. There are two developmental lines of function games: one which leads to fine-motor construction games and a second line which leads to sports games.

The latter include, for instance, riding a scooter, tricycle and bicycle, roller skating, swinging and also skating and skiing provided they do not serve objectives external to play (Otto 1976). Most of the functional movement and sports games, which are sometimes also called individual games (Keller 1976), presuppose the use of some equipment. Equipments have in them only an auxiliary function, however. The basic motivation is the delight in movements, which are repeated without interruption.

Ample time and opportunity as well as equipment should be reserved in preschool physical education for functional movement games to enable the children to realize fully their sensory-motor and gross-motor activities for the benefit of their further development. This is important because the sensory-motor development of preschool children occurs during a very short period of time (Otto 1976). In Finland we have a lot to do, for instance, in the planning of the apparatuses and equipment of playgrounds.

2.2. Physically active rule games

Rule games are often considered to be most advanced form of play. They usually start appearing in kindergarten age (4-6 years), and their dominant period extends into school age (Piaget 1962). Rule games start appearing in children's play at a stage which Winter (1975) describes as the period of learning the combinations of basic motor readinesses (e.g. the combination of running and jumping). At the same time the level of performance is also improved and the quality of movements develops. Children learn to apply their basic motor abilities in different varying situations. Physically active rule games provide good opportunities for the exercise and perfection of basic motor readinesses.

Rules are an essential part of other games besides rule games proper, but in the latter they dominate the play. Rule games are characterized by their co-operative nature and long traditions. They are transmitted from one generation to another as a cultural heritage.

Most of the rules of movement games develop children's inhibitory processes. In them children act against immediate impulses and their greatest self-control occurs in play (Netschajewa 1977, Vygotsky 1976).

Functional movement games and rule games can both be used in preschool physical education as didactic games. Games must be selected so that children master the required movements and movement combinations in their basic forms and understand the progress of the game (Keller 1976). Gradually children learn to organize them independently.

3. FINNISH EMPIRICAL PLAY STUDIES

Preschool physical education should be manysided and compensate for the onesidedness which may be inherent in the child's activities in his home environment. In a large Finnish study (Elinympäristön uudistuminen 1976), which was carried out in a city with about 100 000 inhabitants, it was found out that there were clear differences between different areas and neighbourhoods in the quantity and quality of children's outdoor activities. Traffic density and structure of population, especially the number of children, among other things, were reflected in children's activities. Urban environment easily restricts children's movement and sport games in particular. It has been found that there are problems in maintaining and transmitting rule game heritage in the new housing areas of big cities.

In the study by Helanko (1969), which was carried out in one of Finland's three biggest cities, it was found that among the ten most common outdoor games of 3-5-year-olds were three movement games: swinging, chasing game and riding a bicycle. Among the ten most popular playground games of 6-7-year-old boys were riding bicycle, bicycle ralley, chasing game and its variation "cop and robbers", climbing and football. Among 6-7-year-old girls the corresponding games were chasing game, skipping and swinging. In some other Finnish studies (Nummenmaa et al. 1971, Rouhiainen & Nummenmaa 1971, Syvänen & Setälä 1972) the most popular playground games have turned out to be sandbox games, family role play among girls, construction game among boys, and cycling and skiing as movement games.

In the preliminary study of the present project the most typical preschool and playground games of physically active nature of 61 6-year-old children (31 boys and 30 girls; the children were interviewed) could be classified as indicated in Table 1. Play categories are not, of course, "entirely pure". A given game classified into one particular category may contain features typical of another play category.

TABLE 1. Classification and per cent distribution of boys' and girls' movement games.

CATEGORY OF GAME	GIRLS %	BOYS %
Ball games	7	36
Running games	18	22
Co-ordination, agility and balance games	24	17
Jumping and skipping games	26	3
Power games (Hanging, pulling, pushing etc.)	9	8
Climbing games	3	4
Other games	13	10
Total	100	100

The results gave some indications about partly different direction of boys' and girls' physically active games and interests. The clearest difference was boys' interest in ball games and girls' interest in jumping and skipping games. The results showed consistently with earlier studies that among the physically active play of Finnish preschool children during the snow-free period the following activities have a great signifinance: football among boys, skipping games among girls and among both sexes riding a bicycle, swinging and running games.

As a continuation to the preliminary study the investigation focussed on the contents and amount of physical activity and movement games of children in daily outdoor situations in preschool. Observation, interview and pedometer were used as research methods. The study comprised 137 children aged one to six. Observation took place at two levels. At given intervals the activities of the whole group of children in the playground were observed cross-sectionally. In addition to that the activity of each individual child was followed longitudinally.

The analysis of the observation data is under way. The results naturally reflect the influence of the pedagogical work of the day care centres.

The quantity and intensity of children's physical activity in outdoor situations was measured by means of the pedometer. A preliminary analysis of data confirmed the results obtained in other countries, according to which the amount of physical activity among children correlated with age and sex so that boys were physically more active than girls.

The questions of the amount, content and orientation of children's physical activity have important pedagogical implications. On the basis of theoretical and empirical analyses the present research project will attempt to systematize movement games suited to different age and developmental levels so that educators can make use of them in their work consciously and manysidedly and thus extend children's play and movement habits which easily tend to remain onesided if left entirely to children's spontaneous activity.

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2. RESEARCH PROJECT ON SCHOOL PHYSICAL EDUCATION

In 1974 there started in Finland a public discussion about physical education, particularly school physical education, about its significance and its need of knowledge. The president expressed his concern about the state of physical education and the Minister of Education supported the intensification of research on school physical education.

The Research Institute of Physical Culture and Health iniatiated in 1974 systematic research on school physical education with a view to contributing to its development by means of research. An Advisory Council for Research on School Physical Education was set up to direct and supervise research activities. The members of the council represent the National Board of Education, The Finnish Association of Physical Education Teachers, the University of Jyväskylä and the Research Institute of Physical Culture and Health.

The Advisory Council decided that research activities should be started by preparing a general plan for a programme of research on school physical education covering the years from 1975 through 1979. The purpose of the policy programme is to identify the most important and urgent research topics in the field of school physical education and to help focus limited research resources on the study of the specified problems. The Advisory Council hopes that the plan would be of use in research, teaching and decision making concerning the allocation of research resources.

For the implementation of the above-mentioned policy programme the Research Institute of Physical Culture and Health, in collaboration with the Department of Physical Education, University of Jyväskylä, in 1975 started a research project on school physical education, which aims at developing the physical education curriculum of the comprehensive school and at promoting its realization, giving special attention to the clarification of objectives, to the significance of teaching contents and to the development of evaluation methods. The project consists of three subprojects.

In the subproject on pupils' physical fitness a large survey of comprehensive and secondary school pupils' physical fitness has been carried out using an international fitness test as the measuring *instruments. The sample consists of 2796 boys and girls from grades* 3-9 of the comprehensive school and from grades 1-7 of the secondary school from 20 communities and 54 schools (Nupponen 1976). The purpose of study is:

1. to produce a standardized (international) physical fitness test for use in Finnish schools, which also includes a manual and norms
2. to study how pupils' fitness varies according to teaching contents, teaching circumstances, home background, place of residence and other related factors
3. to develop a system for the monitoring and follow-up of pupils' physical fitness for the purposes of follow-up at the level of the whole educational system.

The study of pupils' interest in physical activity has first concentrated on the theoretical background of interest and motivation for physical activity and development methods for the measurement of interest and motivation. It has been carried out a survey of physical activity interests similar to the one made in the fitness subproject. The main problem of the project on pupils' physical activity interests is how it is formed during school age and what is the contribution of teaching contents, teaching methods and circumstances and some other environmental factors to the development of interest in physical activity. Also the interest project aspires to develop instruments for measuring interest and motivation in schools. Similarly it is planned to create a school system level system for the follow-up of pupils' interest and motivation for physical activity.

A third subproject has started in the autumn of 1977, whose purpose is to study structure of motor skills, to identify the most important basic capabilities for the curriculum, to develop instruments for measuring basic skills in schools, and as the main task to study the significance of motor skills from the point of view of the realization of the fitness and interest objectives of school physical education.

It is also planned to analyze the results of these three subprojects, to produce a synthesis of them and to draw conclusions for the development of the curriculum.

Martti Silvennoinen

COMPREHENSIVE SCHOOL PUPILS' MOTIVATION FOR SPORT AND PHYSICAL ACTIVITY

IV International Congress of ISSP,
Prague, 3-9.10.1977

1. INDRODUCTION

In 1974 a large-scale study of school physical education was started at the Research Institute of Physical Culture and Health. As the first stage was published a "Plan for a Programme of Research on School Physical Education in Finland in 1975-1979" (Nupponen 1976). It defined the most urgent research topics concerning physical education in schools.

The empirical data collection was started in 1976 with the financial support of the Ministry of Education. The physical functioning ability of 2796 pupils (aged 9-21) was measured by a set of tests designed for the purpose.

Of the other sub-projects the study of sport interests is at the moment in the data collection stage and the investigation of motor functioning ability is in the planning stage.

After a period of basic research (1976-1978) the results of the whole project will be utilized in practical physical education teaching so that on the basis of empirical data evaluation methods will be developed of pupils' physical functioning capacity and of their sport interests.

The data of basic research are also of use in a study which aims at ascertaining the obstacles to the whole population becoming motivated for physical activity. In recent years this task has been considered one of the priority areas of Finnish research on physical education.

2. THE RESEARCH DOMAIN OF MOTIVATION FOR SPORT

Even if the first large-scale survey of pupils' sport interests was carried out in Finland as early as 1929, later research has paid too little attention to the development of physical education in schools and to a reliable investigation of pupils' sport interests since research activities have been dominated by other topics. One aspect of this bias is indicated also by the fact that at one time students were the part of population whose physical condition and physical activities were studied most frequently.

In the light of present research information it appears that relatively much is now known about the physical activities of the school-aged population. International exchange of information also advances rapidly in this area. It is not, however, possible to apply directly research conducted in other countries to Finnish conditions; there is a need of a national research tradition.

An analysis of research on physical activities carried out in different countries reveals a number of similarities, at least the following.

1. In the descriptions of data the differences between boys and girls in physical activities are much the same everywhere. Differences appear, for instance, in the relative preferences of sport events and of the sport events in school physical education (e.g. Macak 1963, Telama 1972, Engström 1975, Stensaasen 1976) as well as in attitudes towards physical education at school.

   There seems to be differences between boys and girls also with regard to the experimental basis of physical activities: girls stress the importance of expressiveness while boys emphasize goal-orientation (e.g. Macak 1963, Engström 1975, Stensaasen 1976).

   It also appears to be commonly so that boys tend to have more time for active sport interests even at school age, even if the intensity of interest decreases with age in both sexes (Kahl 1970, 1971, Telama 1972, Stensaasen 1976). With age declines also interest in school physical education.

2. In the explanation of causal relationships within data, background variables have included factors such as variables indicative of children's and young people's social environment (parents, friends, family institution), socio-economic variables (parents' education, level of income, social status) as well as type of living environment (urban - rural).

3. DESING OF INTEREST SURVEY

In the survey of Finnish pupils' physical activity interests, which is in progress at the Research Institute, particular attention has been given to the description of motive structures and to ascertaining what factors influnce them. Thus the survey has not been limited to the quantitative study of activities, of which there already exists a fair amount of data. This approach is believed to yield a deeper understanding of the motivational base of the whole compulsory school aged population and of its variability. By means of some curricular variables (e.g. teaching contents) and variables describing children's leisure time activity-environment it is hoped to be able to explain, among other things, the impact of school physical education on the content and development of the motivational base.

Mail questionnaire as a form of data collection has some inherent limitations. A questionnaire administered to pupils of different age levels may not be equally suitable to all age levels, since the character of physical activity is known to change with age. On the other hand, the survey of real physical activity may remain onesided and inadequate, if measurement, particularly among young children, is limited only to common sport events.

4. COLLECTION OF INTEREST DATA

The survey is based on a representative sample of Finnish comprehensive school pupils[1]. Data collection is done in two ways: interview (pupils in grades 1-3) and mail questionnaire (other age levels). The mail questionnaire will be sent out in November 1977 and the interview will be conducted in spring 1978.

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[1] In the new Finnish educational system the comprehensive school is the school of compulsory education (7-16 yrs.) and comprises 9 grades. The survey also includes upper secondary school pupils in order to get a wider age distribution. Upper secondary school is a three-year school (16-19 yrs.) and is the main channel of qualification for higher education.

5. PILOT STUDY

The questionnaire was pilot-tested in spring 1977. The sample of pupils was non-random, and thus results are to be interpreted with due reservation. The dry run carried out mainly in order to be able to have some empirical data for the construction of the final version of the questionnaire.

The questionnaire was presented to 440 pupils, and it was returned by 415 pupils, in other words the ratex of return was 94 %. The high rate was mainly due to the fact that P.E. teachers in different schools undertook to give out and collect the questionnaires.

Motives related to physical interests were asked with 1) the open-ended question "Why do you engage in sport or physical exercise during your leisure time?", to which pupils had to produce a personal answer. A number of motives came up, since 86 % of respondents presented at least one reason. Data analysis is in progress.

2) Structured questions were used when pupils were asked to estimate their physical activity interests with regard to 28 motive contents.

In the construction of the motive contents account was taken of the categories used by, for instance, Hennig (1965), Ilg, Polakowski & Rohne (1970), Rosenfeld (1973), Biener (1976) and Artus (1973). It was considered important that the questionnaire should contain categories which represent the emotional-affective, cognitive and physiomotor dimensions. The method of presenting the motive contents is shown in Figure 1.

Question: (Motive content)	"Active interest in sport or physical exercise may be a means of meeting friends and enjoy their company"	
Response: (Recognition of motive content and evaluation)	This is not how I have felt	☐
	This is how I have felt but I do not think that it really applies to me	☐
	This is how I have felt and to some extent it is relevant to me	☐
	This is how I have felt and I think that it is highly relevant to me	☐

FIGURE 1. Method of presenting motive contents in the questionnaire

6. SOME PILOT TEST RESULTS

Table 1 shows the order of importance of motive contents among boys and girls.

TABLE 1. Order of importance of motive contents among boys and girls1)

Motive	Order		%	
	Girls N (118)	Boys (119)	Girls	Boys
1. Being out-of-doors and enjoying the nature	1	1	90.7	85.7
2. Health	2	1	87.3	85.7
3. Relaxation and recreation	3-----	12	83.7	69.8
4. Feeling joy and contentment	4	5	82.2	74.8
5. Healthy habits	5	6	81.3	73.1
6. Knowledge of environment and nature	6	8	77.8	71.8
7. Physical endurance	7------	3	75.2	81.3
8. Meeting friends	8	11	73.7	70.4
9. A way of pastime	9	7	73.5	72.3
10. Useful for later life	10	9	70.3	71.4
11. On the side of daily cnores (informal physical activity)	11	13	69.2	62.7
12. Physical strength	12------	4	66.4	79.9
13. Building of skills and abilities	13	9	65.3	71.4
14. Presence of boys and girls	13-----	20	65.3	45.4
15. Improvement of school performance	15	18	61.5	50.3
16. Exertion and experience of exhaustion	16	14	58.4	58.5
17. Improving one´s figure	17-----	23	55.1	33.7
18. Making personal plans	18	15	53.4	56.4
19. Independent planning of time expenditure	19	19	51.3	45.8
20. Experiencing new things	19	21	51.3	43.6
21. Approval of peers	21-----	16	50.8	55.5
22. Expressive movement, self expression	22	22	49.1	36.2
23. Learning skillful performances	23-----	17	47.5	52.1
24. Knowledge of the significance of physical activity	24	25	40.2	31.9
25. Showing excellence of performance	25	24	24.6	33.6
26. Parental support	26	26	17.8	22.7
27. Civic duty	27	27	16.2	18.5
28. Fad	28	28	13.6	16.0

1) Categories "to some extent relevant" and "highly relevant" have been combined in the per cent frequencies.

"Being out-of-doors and enjoying the nature" is the most frequently cited reason for physical activity among boys and girls. Although the results are suggestive rather than fully representative, we may conclude that the dominance of this motive is explained besides a certain Finnish "outdoor tradition" (skiing, hiking etc.) partly by the fact jogging has increased in popularity among young people, especially girls (e.g. Telama 1977).

The most distinct differences in the motive contents between boys and girls are such that girls prefer relaxation and recreation, give more emphasis to the presence of both sexes and to the improvement of one's figure. Boys, in turn, prefer clearly more than girls developing the functioning capacity of the body (strength and endurance), give more stress to gaining the approval of peers and to learning skilled performance.

A distinct difference from some earlier, mainly Scandinavian studies (e.g. Engström 1972, 1975, Telama & Kostiainen 1975) is that the competitive motive, particularly among boys, did not obtain a similarly significant position.

Figures 2 and 3 illustrated the weighing of some of the most important motives on different age levels among boys and girls.

It can be concluded from Figures 2 and 3 that the differences between boys and girls can be explained not only by age but also by type of school. It would appear, the smallness of the sample notwithstanding, that in the upper grades of the comprehensive school (age 14-15) motives become relatively less important among boys whereas among girls the trend is the opposite. Among upper secondary school students (aged 17-18) the opposite holds true. Among girls there is one exception insofar as the rating of the importance of relaxation and recreation shows a consistent upward trend.

A fairly general trait, which is not seen in Figures 2 and 3, appears to be that in almost all motive contents ratings shift from "highly relevant" to "to some extent relevant", and simultaneously increase

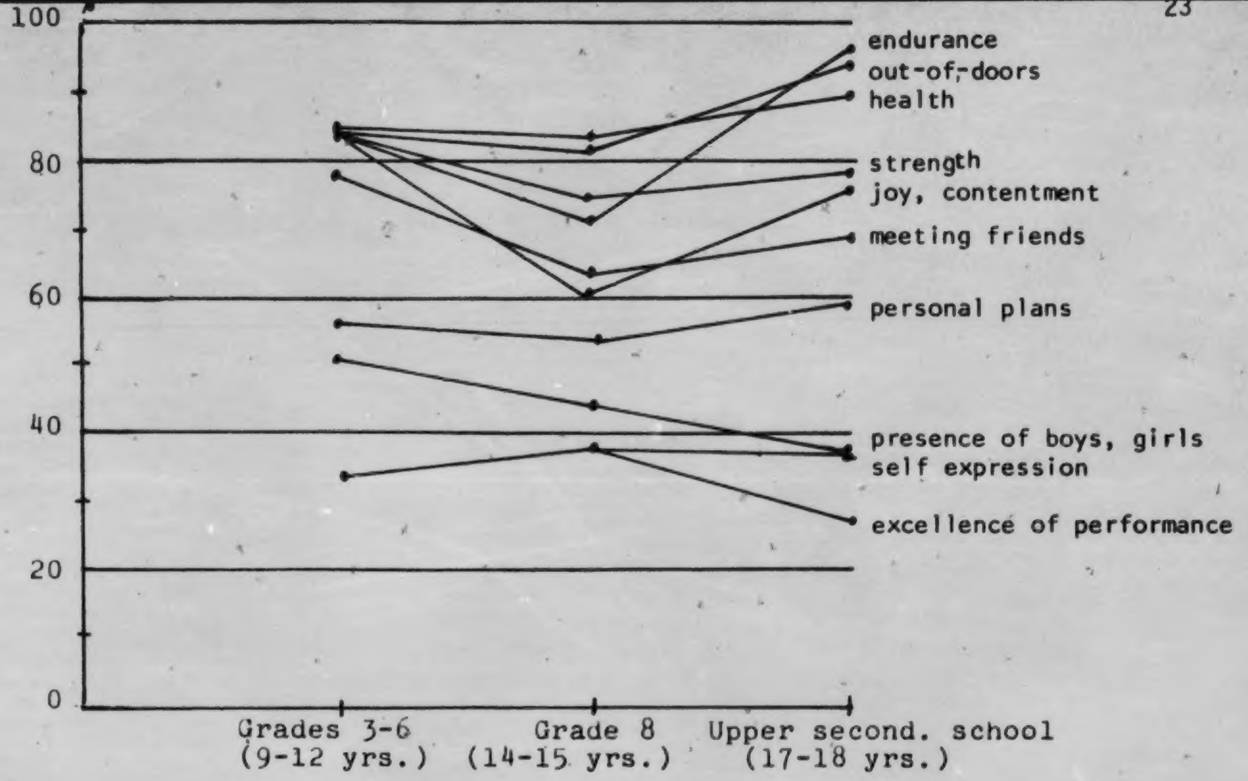

FIGURE 2. The preference of some motives among boys by grade level[1)]

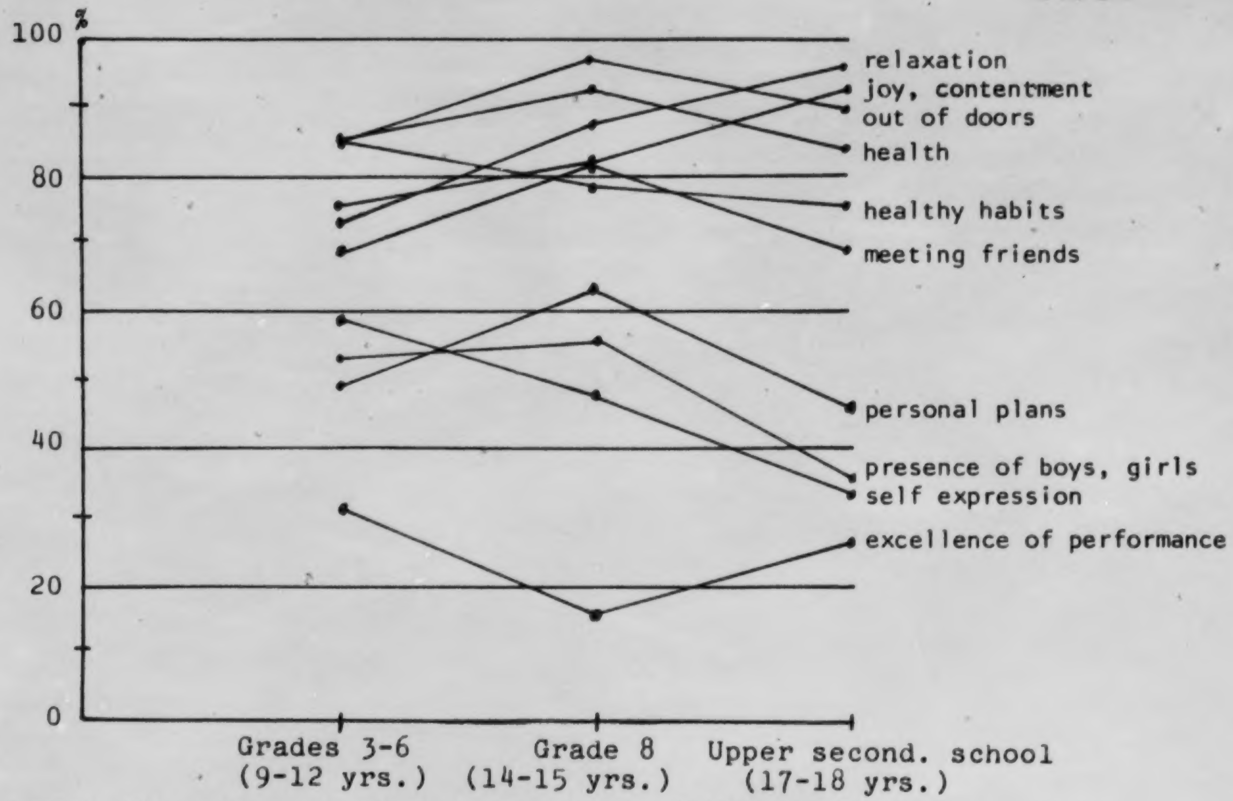

FIGURE 3. The preference of some motives among girls by grade level

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1) In the distributions the categories "to some extent relevant" and "highly relevant" have been combined in the per cent frequencies.

the number of those pupils who report that they have not recognized or been aware of motives to the same extent as pupils in lower grades have done. For further analyses the fact that motive contents or rather their variability seem to diminish with increasing age is of interest. This finding gives some support to the idea that with increasing age in physical activity there is a shift from activity guided by impulsive motives and needs towards fewer and more stable indirect motives.

7.CONCLUDING REMARKS

The study on pupils' motives for sport and physical activity is in progress and the results presented in the above are to be seen as preliminary. There is no point in presenting a long list of motives without giving any reasons for them. The study must be based on a solid conceptual analysis. For instance, it must be decided whether we want to study pupils' physical activity in general and its intensity or interest in typical forms of physical exercise and related needs and motives for activity. Special attention has to be given to the independence of need and motive scales, so that the dimensions they represent can be thought to be real.

The instrument for measuring motives used in the dry run seems to be feasible in the questionnaire technique with the exception of the lowest grades. When the data concerning the comprehensive school pupils has been collected and analysed from all age levels it will be possible to develop test items so that they can also be used by teachers in their practical school work.

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Risto Telama

PUPILS' INTEREST AND MOTIVATION FOR SPORT IN FINLAND

Scandinavian Conference "Symposium om Idraetsadfaerds", Copenhagen, 17-19.3.1977

1. INTRODUCTION

This paper is mainly concerned with some descriptive data on Finnish school-children's sports activity, participation in different sports and motivation for sports in comparison with corresponding data on Swedish and Norwegian school-children. The Finnish data has been collected from various investigations, but mostly from two extensive studies. The one is the author's study on school-children's sports activities published in 1972 where the sample comprised 40 secondary schools with 185 classes and 3340 pupils (Telama 1972). The other study here referred to is the before-mentioned school sports activity study. In connection with the part study on physical fitness, a sample comprising 2796 pupils from 54 different schools was also questionned about their sports interests.

2. FINNISH PUPILS' ACTIVE INTEREST IN PHYSICAL ACTIVITY

2.1. Frequency of activity

The frequency of physical activities was asked about in the fitness survey (Nupponen, unpublished). The frequency data of physical activities by sex and age is presented in appendix 2. Table 1 includes age groups corresponding to grades 4, 6 and 8 for which there exists comparison data from Norway (Stensaasen 1976).

TABLE 1. Frequency of physical activities of Finnish and Norwegian pupils.

Degree of involvement[1]		Grade 4		Grade 6		Grade 8		Total	
		Finn.	Norw.	Finn.	Norw.	Finn.	Norw.	Finn.	Norw.
BOYS									
High		36	26	41	34	22	21	31	28
Medium		56	41	45	52	61	51	54	48
Low		8	33	14	13	17	28	15	24
	%	100	100	100	100	100	100	100	100
	n	78	230	180	244	247	182	505	656
GIRLS									
High		27	6	29	11	28	10	28	8
Medium		55	52	56	57	59	53	58	54
Low		18	42	15	32	13	37	14	38
	%	100	100	100	100	100	100	100	100
	n	56	263	194	228	274	167	524	658

[1] Note. The classification of participation is not fully comparable.

		Finnish study (Nupponen, not publ.)	Norwegian study (Stensaasen 1976)
High	=	every day	almost every day
Medium	=	1-6 times/week	1-3 days a week
Low	=	less than once a week (appendix 1)	less than once a week

For the implementation of the above-mentioned policy programme the Research Institute of Physical Culture and Health in 1975 started a research project on school physical education, which aims at developing the physical education curriculum of the comprehensive school and at promoting its realization, giving special attention to the clarification of objectives, to the significance of teaching contents and to the development of evaluation methods. So far the project has in line with the two major objectives of comprehensive school physical education focussed on pupils' physical fitness and on pupils' interest in physical activity.

In the subproject on pupils' physical fitness a large survey of comprehensive and secondary school pupils' physical fitness has been carried out using an international fitness test as the measuring instruments. The sample consists of 2796 boys and girls from grades 3-9 of the comprehensive school and from grades 1-7 of the secondary school from 20 communities and 54 schools (Nupponen 1976b).

The purpose of study is

1. to produce a standardized (international) physical fitness test for use in Finnish schools, which also includes a manual and norms
2. to study how pupils' fitness varies according to teaching contents, teaching circumstances, home background, place of residence and other related factors
3. to develop a system for the monitoring and follow-up of pupils' physical fitness for the purposes of follow-up at the level of the whole educational system..

The study of pupils' interest in physical activity has first concentrated on the theoretical background of interest and motivation for physical activity and development methods for the measurement of interest and motivation. It is planned to carry out a survey of physical activity interests similar to the one made in the fitness subproject. The main problem of the project on pupils' physical activity interests is how it is formed during school age and what is the contribution of teaching contents, teaching methods and circumstances and some other environmental factors to the development of interest in physical activity. Also the interest project aspires to develop instruments for measuring interest and motivation in schools. Similarly it is planned to create a school system level system for the follow-up of pupils' interest and motivation for physical activity.

Finnish boys appear to take a somewhat more active interest in physical activity than Norwegian boys, but the difference is not great. On the other hand, Finnish girls are clearly more active than Norwegian girls. Differences between boys and girls are very great in Norway. The number of those engaged in physical activity every day decreases with age a little less among Finnish girls than among boys (Figures 1 and 2).

2.2. Time spent on physical activity

There are data on the Finnish pupils' use of time provided by a study in 1969 of secondary school pupils' interests (Telama 1970, 1972), in which using a simple method pupils were asked about their use of time on physical activities and other leisure time activities (appendix 3). Table 2 shows means indicative of time expenditure by sex and grade level.

TABLE 2. Time expenditure of boys and girls on different grade levels (means of hours and percentage of total time-budget of leisure time)[2]

	Grades in the secondary school (and the means of age)							
	II (13)		IV (15)		VII (18)		Total	
Activities[1]	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%
BOYS								
Sports	9.4	26	7.0	20	3.9	11	7.1	20
Housework	3.9	11	3.7	11	3.7	10	3.7	11
Home work	7.4	20	7.2	21	9.2	26	7.8	22
TV-watching	10.5	29	8.7	25	7.0	20	8.9	25
Other pastime	5.4	15	7.6	22	11.6	33	7.8	22
	36.3	100	34.2	100	35.4	100	35.3	100
GIRLS								
Sports	5.9	16	4.7	13	3.7	9	4.9	13
Housework	5.8	16	6.7	18	6.7	17	6.3	17
Home work	9.1	25	8.9	23	11.4	29	9.6	25
TV-watching	8.4	23	7.2	19	5.4	14	7.2	19
Other pastime	7.3	20	10.3	27	11.8	30	9.6	25
	36.5	100	37.8	100	38.9	100	37.5	100

[1] The specific activities of each category can be found in the questionnaire, appendix 3.

[2] The means of hours have been computed on five different weeks, see figure 3.

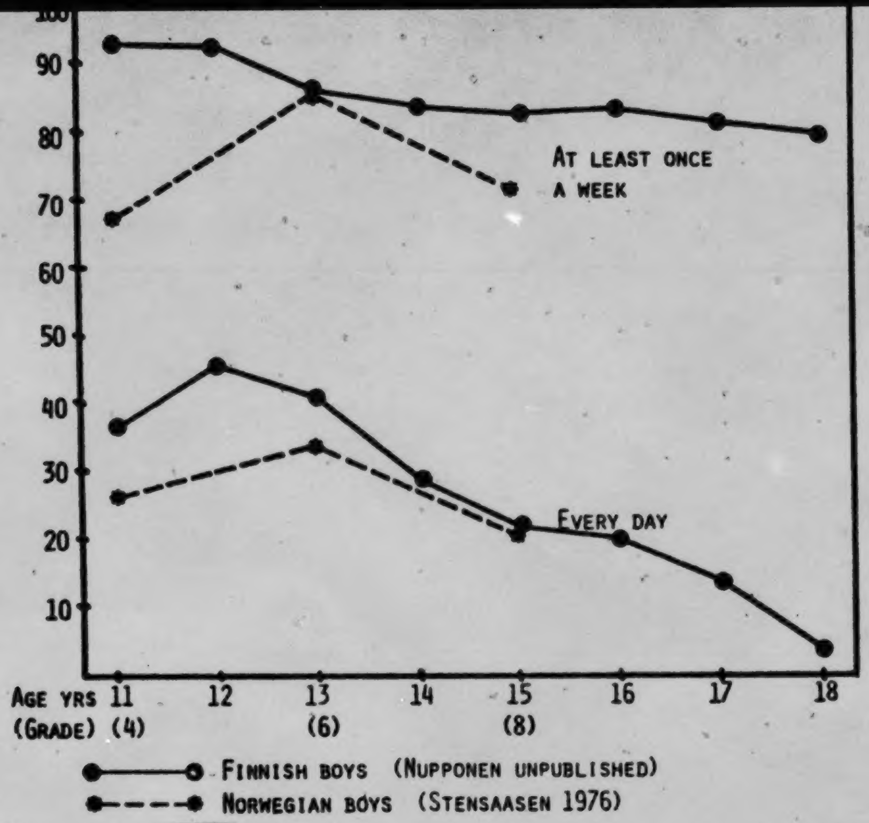

FIGURE 1. Frequency of physical activities of Finnish and Norwegian boys by age (grade). Percentage of those engaged.

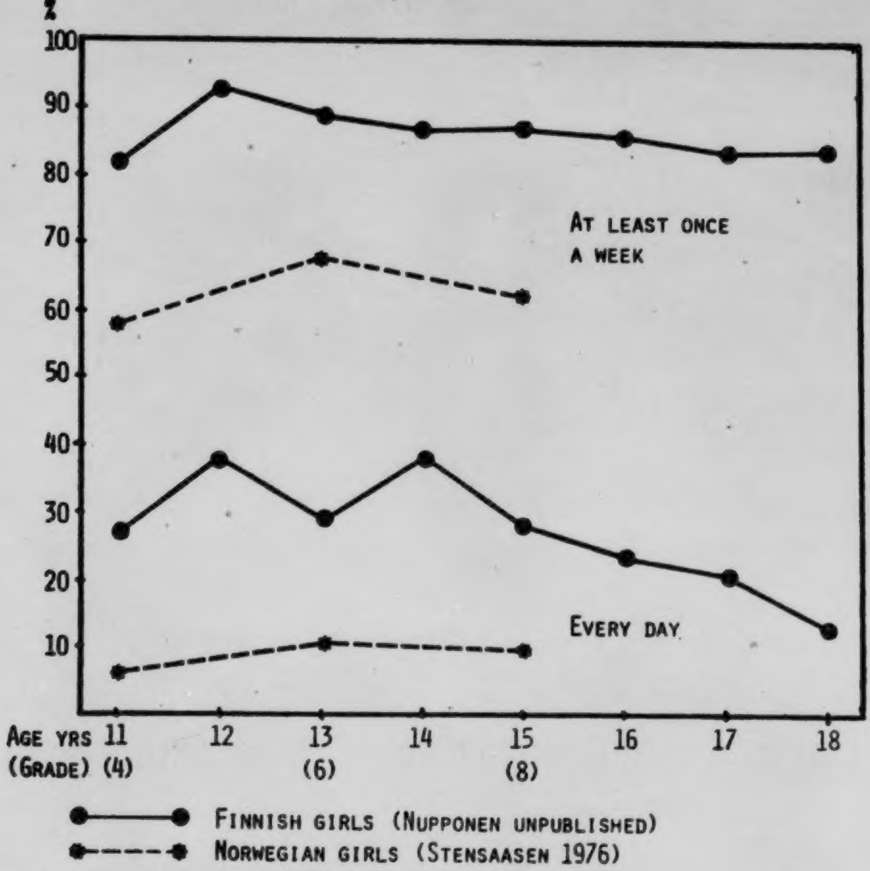

FIGURE 2. Frequency of physical activities of Finnish and Norwegian girls by age (grade). Percentage of those engaged.

TABLE 3. Hours spent on sports activities during the leisure time in Finland, DDR and Sweden.

	Study	Subjects			Hours
		Sex	Age	N	$\bar{X}$
SWEDEN	Engström (1974)	Boys	14-15	1090	5.0
FINLAND	Telama (1970)	Boys	15.4	654	6.6 1)
SWEDEN	Engström (1974)	Girls	14-15	1053	3.5
FINLAND	Telama (1970)	Girls	15.2	822	4.7 1)
DDR	Philipp (1967)	Boys	13.3	250	8.6
FINLAND	Telama (1970)	Boys	13.1	735	9.3 1)
DDR	Philipp (1967)	Girls	13.4	245	5.2
FINLAND	Telama (1970)	Girls	13.1	805	5.8 1)
DDR	Röblitz (1966)	B + G	17-18	403	5.5 (towns)
FINLAND	Telama (1970)	B + G	15-18	747	4.2 (towns) 1)

1) The means in the Finnish data are counted from one week in March and two weeks in May.

Students reported that they had spent approximately 6 hrs/wk on sports activities; boys about 7 hrs/wk and girls about 5 hrs/wk. From these figures a certain over-estimation, which is quite frequent in estimating time-expenditure, has to be deducted. However, the hours spent on sports during leisure are much more frequent than the number of physical education lessons in the school. As compared with the Swedish students, studied by Engstöm (1972, 1974), and with students in DDR the Finnish boys and girls are a little more active in sports during leisure. The differences are not very marked. Because in the Finnish data (table 2) one of the five weeks pooled in the mean was a sports holiday, the figures in the table 3 are counted only from three weeks in March and May excluding the sports holiday.

Differences between the various age groups are great especially in boys (figure 3). Boys on the 2nd grade spend over twice as much time on sports activities as do boys on the 7th grade. Differences between measurements are also notable. During the sports holiday in winter the time spent on sports activities is approximately 8 hrs/wk, but during the slushy time in April only about 4 hrs/wk. In Finland the season, above all the slushy time, affects greatly sports activities, because the greatest part of sports activities (about 80%) is outdoor activity.

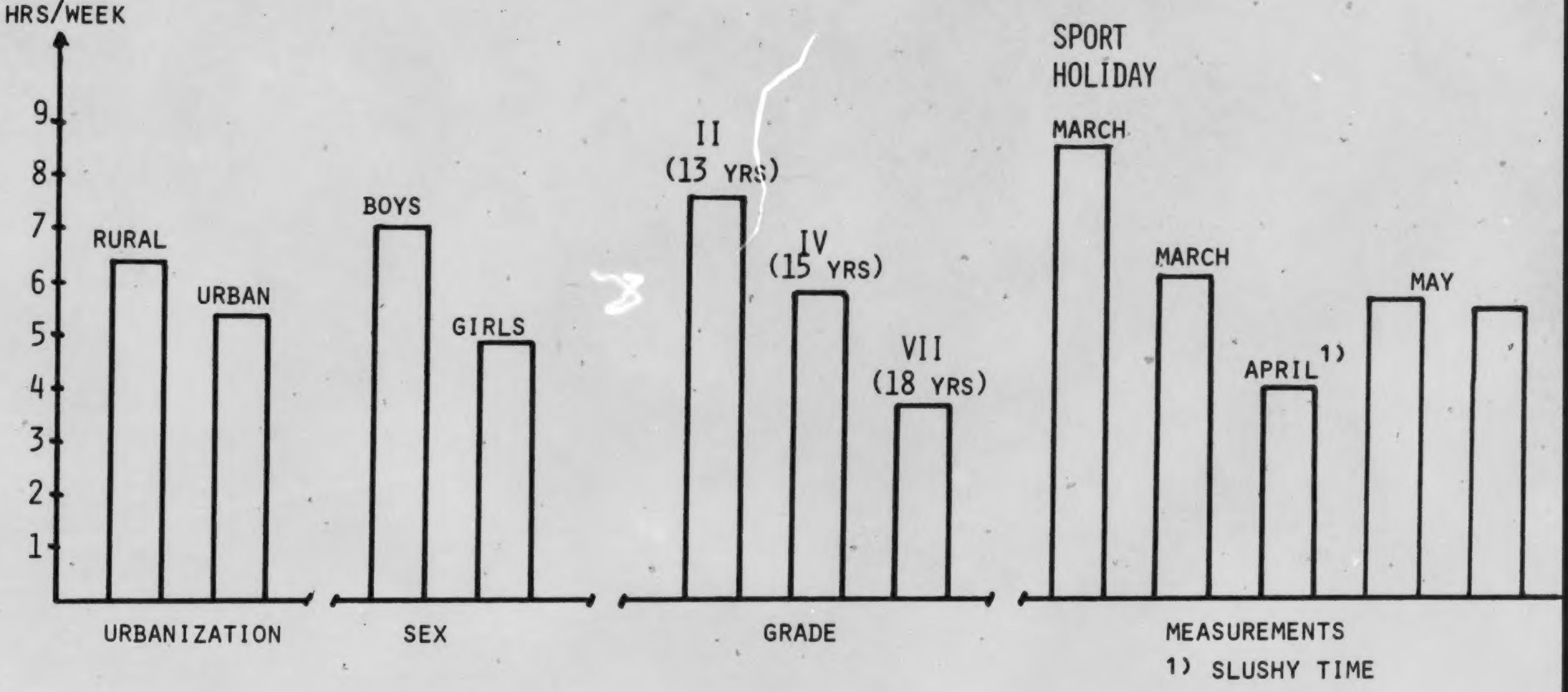

Figure 3. Hours spent on sports activities by urbanization, sex, grade and measurements (Telama 1970).

The great increase in sports activities during the sports holiday in winter proved that it was adequately used. There was also increase in the number of participants; sports holiday activated even those pupils who do not usually participate in sports.

There was also a significant and interesting difference between girls' and boys' time-budgets (figure 4). Boys spend more time on sports activities and TV-watching than girls. Girls' time-budget exhibits higher regard to duties. Girls do more domestic work and homework than boys. This sex-role is learnt before puberty. On the other hand girls spend more time on other pastime than boys.

A comparison between the time-budgets of the different groups give following results: (figure 5) when the time spent on sports activities decreases with age, the time spent on home-work and other interests, like arts and dating, increases. It was also found that performance in sports did not decrease as much as the time spent in sports. This indicates that the decrease of sports participation with age does not result purely from a growing dislike of sports, but simply from fact that the more mature pupils have so many other important activities that the time for sports decreases.

2.3. Direction of interest

Pupils' leisure-time interest in sport is directed largely to the same forms of activities in Finland and in Sweden (Table 4 and 5). Also in Norway roughly the same events are popular (Stensaasen 1974). The most significant difference between the three countries is in the interest in volley ball, which is considerably less popular in Sweden than in Finland and Norway.

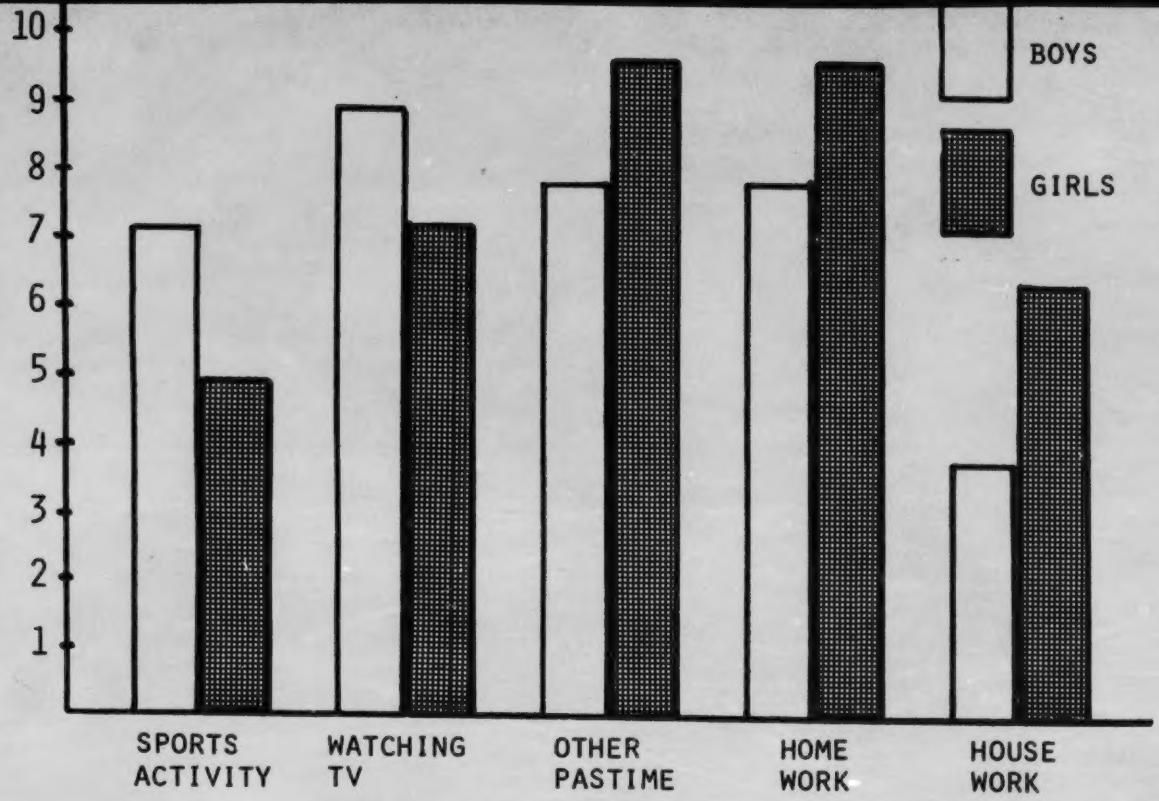

FIGURE 4. BOYS' AND GIRLS' TIME-BUDGET.

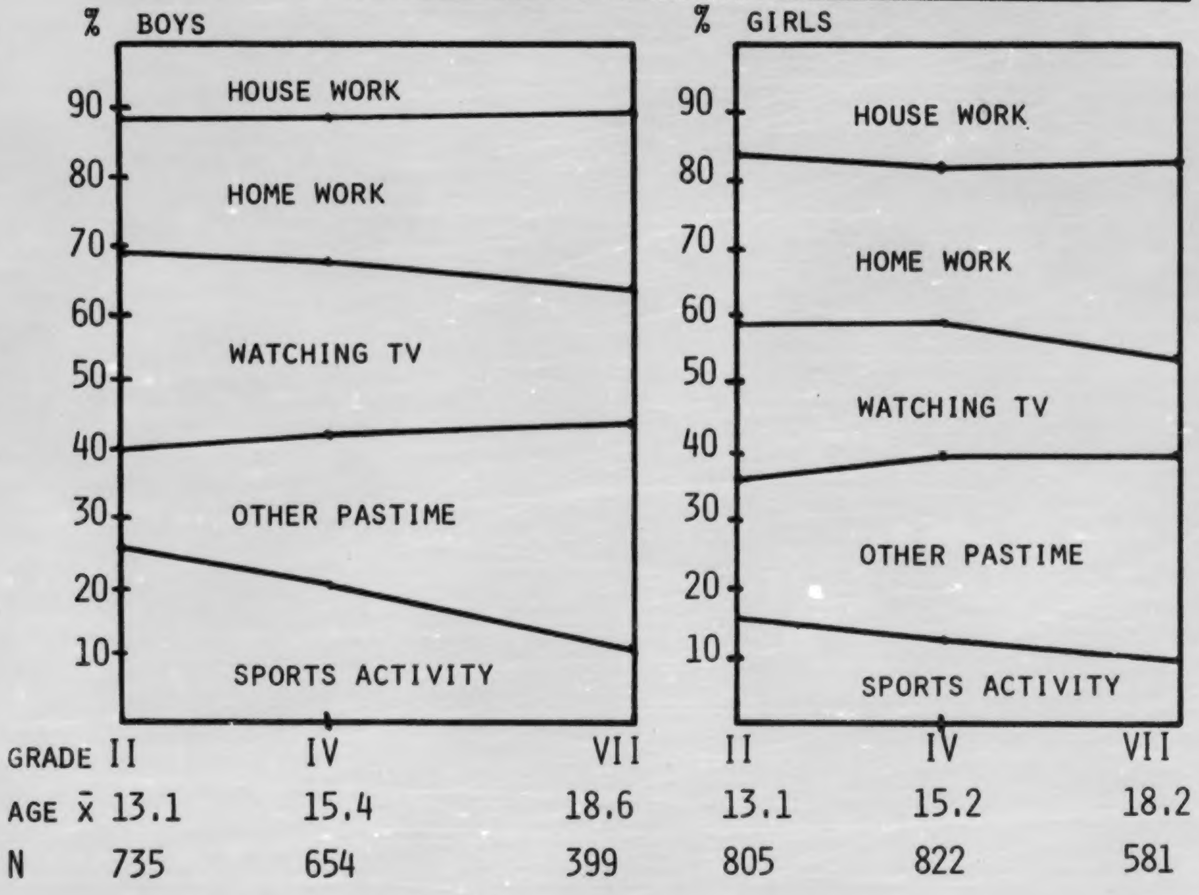

FIGURE 5. TIME EXPENDITURE ON DIFFERENT GRADE LEVELS (PERCENTAGE OF TOTAL TIME BUDGET) (TELAMA 1970).

TABLE 4. Frequency of participation in different sport events. Boys.

Telama (1970)[1] Age appr. 15 yrs n = 654	%	Nupponen (not publ.)[2] Age appr. 15 yrs n = 247	%	Engström (1972, 1974)[3] Age 14-15 yrs n = 1090	%
1. Cross-C. skiing	81	1. Soccer	64	1. Soccer	75
2. Cycling	80	2. Swimming	57	2. Ice-hockey	62
3. Ice-hockey	64	3. Ice-hockey	55	3. Swimming	59
4. Soccer	63	3. Ice-skating	55	4. Table tennis	56
5. Volley ball	54	5. Cross-C. skiing	42	5. Cycling	48
6. Finnish baseball	43	6. Volley ball	35	6. Sport fishing	47
7. Ice-skating	33	7. Finnish baseball	32	7. Badminton	42
8. Track and field	32	8. Badminton	31	8. Cross-C. skiing	36
9. Basketball	31	9. Track and field cast-events	29	9. Slalom	35
10. Badminton	30	10. Canoeing & rowing	28	10. Bandy	29
11. Gymnastics	24	11. Long distance running Cross-C. running	24	11. Track and field	28
12. Weight lifting	23	12. Slalom	23	12. Shooting	27
13. Slalom	19	13. Basketball	22	13. Tennis	27
14. Apparatus gymnastics	15	14. Running, sprint	21	14. Walking	26
15. Swimming[4]	14	14. Track and field Jump-events	21	15. Hockey-Bockey	20
16. Fitness training	13	16. Fitness training	16	16. Ice-skating	19
17. Tennis	13	17. Orientation	14	17. Handball	18
18. Wrestling	10	18. Dance	13	18. Gymnastics	16
19. Orientation	6	19. Gymnastics	4	19. Cross-C. running	16
20. Handball	1	20. Apparatus gymnastics	2	20. Basketball	15
				21. Golf	14
				22. Weight lifting	13
				23. Sailing	12
				24. Volley ball	11
				25. Orientation	11

1) Percentage of students who have participated in the event at least once during the five weeks in question.

2) Percentage of students who have participated regularly at least once a week.

3) Percentage of students who at least 10 times devoted leisure-time to different sports during the previous year.

4) Low swimming activity is due to the fact that the enquiry covered only five weeks in March, April and May, when swimming was possible only in pools, which there were few of in Finland in 1969.

TABLE 5. Frequency of participation in different sport events. Girls.

Telama (1970)1) Age appr. 15 yrs		Nupponen (not publ.)2) Age appr. 15 yrs		Engström (1972, 1974)3) Age 14-15 yrs	
n = 822	%	n = 274	%	n = 1053	%
1. Cycling	73	1. Swimming	67	1. Swimming	70
2. Cross-C.skiing	70	2. Dance	54	2. Cycling	67
3. Gymnastics	41	3. Ice-skating	52	3. Walking	67
3. Badminton	41	4. Badminton	51	4. Badminton	46
3. Finnish baseball	41	5. Cross-C. skiing	48	5. Ice-skating	34
6. Volleyball	33	6. Cross-C. running	36	6. Cross-C. skiing	33
6. Ice-skating	33	7. Finnish baseball	34	7. Slalom	27
8. Track and field	27	8. Volleyball	27	8. Table tennis	26
9. Basketball	21	9. Canoeening & rowing	23	9. Gymastics	23
10. Tennis	11	10. Running, sprint	22	10. Horseback riding	17
11. Slalom	10	11. Gymnastics	19	11. Tennis	11
12. Swimming4)	8	12. Slalom	16	11. Track and field	11
12. Ice-hockey or bandy	8	13. Track and field Cast-events	15	11. Golf	11
14. Apparatus gymnastics	7	13. Orientation	15	14. Sport fishing	10
15. Handball	6	13. Soccer	15	14. Soccer	10
16. Orientation	5	16. Track and field Jump events	14	14. Basketball	10
16. Fitness training	5	17. Basketball	9	17. Folk dancing	9
16. Soccer	5	18. Ice-hockey	8	17. Handball	9
		19. Fitness training	7	19. Volleyball	7
		20. Apparatus gymnastics	2	19. Cross-C.running	7

1), 2), 3), 4) Notes in table 4.

It is stated earlier that participation in physical activity decreases with age. The popularity of different sport events varies naturally in different age groups. Interest motivation may be more specific than has been assumed, wherefor the continuity of interest after school-leaving presupposes opportunities of keeping up sport events that remain popular or even become more popular during school age. Appendix 4 shows that such events with "carry over value" are volleyball, jogging and with girls dancing. The curve indicating girls' jogging interest is a good indicator of present interest in physical fitness in Finland and it may partly prove a fad. Also swimming and skiing remain popular among girls even as they grow older.

Events which after the apex popularity at the age of twelve begin to lose active participants are e.g. competitive ball games, soccer, ice-hockey, Finnish baseball, and among individual events slalom. Among girls badminton also belongs to this category (appendix 5). The popularity of gymnastics has decreased in comparison to the data of an earlier study of secondary school students (Telama 1970).

3. SPORTS MOTIVATION

3.1. Attitudes to school physical education

It is a common observation in Norway (Stensaasen 1974), Sweden (Engström 1971, Setterlind 1975) and in Finland (Juvonen 1970, Sysiharju 1970) and perhaps even in Denmark that physical education is among the top in the popularity ratings of school subjects.

Similarly, when pupils are asked about their attitudes towards physical education in general, it is found that the majority are positively inclined to it and only a very small minority have very negative attitudes to physical education (Tables 6-8). The results are essentially similar in different countries, in different school types and among both boys and girls.

TABLE 6. Pupils' general attitude towards school physical education in Finland.

Comprehensive school and senior high school (Juvonen 1970, 1973)

Question: I find the classes in physical education at school to be	Comprehensive school Data collected 1972 Age appr. 13-16 yrs			Senior high school Data collected 1968 Age appr. 18 yrs		
	GIRLS	BOYS	TOTAL	GIRLS	BOYS	TOTAL
N	119	113	232	429	495	924
Very pleasant	9	27	18	8	12	10
Pleasant	71	51	61	52	51	52
Indifferent	5	20	12	27	26	27
Unpleasant	13	2	8	11	8	9
Highly unpleasant	2	-	1	2	3	2
%	100	100	100	100	100	100

Secondary school boys (Toivonen, unpublished)

Grades 2, 4 and 7, N = 990, age approx. 12-18 years.

Statement	Agree[1]	Cannot say	Disagree[2]	Total
I am satisfied with physical education at school	67	14	19	100 %
Physical education at school is one of the most important subjects from the point of view of pupils' overall development	66	20	14	100 %
If physical education lessons were optional, I would take part in them	76	16	8	100 %
School physical education discourages both able and less able pupils	13	21	66	100 %
Physical education lessons are dull	26	26	48	100 %

---

1) Categories "Fully agree" and "Agree" have been combined.

2) Categories "Entirely disagree" and Disagree" have been combined.

TABLE 7. Pupils' general attitude towards school physical education in Sweden.

Grade 8 of the comprehensive school (Engström 1971), data gathered in 1968
Question:

If you think of what has happened during physical education lessons in grade 8, how have you found it in general?		GIRLS	BOYS
	N	1051	1080
Almost always pleasant		24.0	22.8
Often pleasant		29.6	39.2
Sometimes pleasant		39.8	33.7
Almost never pleasant		6.6	4.3
		100 %	100 %

Grades 7 and 8 of the comprehensive school (Setterlind 1975), 1720 boys and girls, data collected in 1970.
Question:
How do you find physical education lessons?

Very pleasant	26
Pleasant	26
To some extent pleasant	27
Neither pleasant nor unpleasant	10
To some extent unpleasant	5
Unpleasant	3
Very unpleasant	3
	100 %

TABLE 8. Pupils' general attitude towards physical education in Norway.

Grades 7, 8 and 9 of the comprehensive school, boys and girls , N=1121 (Stensaasen 1974)
Question:

How is your liking for your school subjects? (physical education)	Fall 1968	Spring 1969
Very well	47.7	46.9
Well	34.3	29.3
Neither well nor badly	12.4	15.6
Badly	3.6	4.9
Very badly	2.0	3.2
	100 %	100 %

3.2. Sports motives

In table 9 we can see pupils are interested in sports primarily as a means of promoting health and physical fitness and as a source of recreation. These have also been found to be among the most important motives with regard to adults (METELI 1975, Högseth & al. 1973).

TABLE 9. The most common sports motives of students.

FINLAND

Telama & Kostiainen 1975
A pilot study.
Secondary school students
Age 11-18 yrs

Motive	Rank BOYS	Rank GIRLS
N	304	329
Good and healthy hobby ...	1	1
Counterbalance to schoolwork	2	3
Relaxation and recreation	3	2
Testing physical fitness .	3	5
Prevention of diseases ...	3	4
Wish to achieve good results	6	9
Enjoyment of winning	7	17
Enjoyment of competition .	8	15
Enjoyment of physical exertion	9	10
Keeping in good health ...	10	8
Habit	11	14
Reducing	11	5
Meeting friends	13	13
Good feeling after exercise	14	7

SWEDEN

Engström 1972, 1974
8 th grade students
Age appr. 14-15 yrs

Motive	Rank BOYS	Rank GIRLS
N	1019	1063
Good condition	1	1
Better health	2	2
Muscle-development	3	12
Competence in some field .	4	7
Enjoyment	5	5
To compete	6	9
Meeting friends	7	4
Alternative to sitting still	8	3
Flexibility (co-ordination)	9	8
Excitement	10	11
Figure-development	11	6
Elegant way of moving	12	10

Competition was also an important motive with boys and reducing weight with girls. Changes in sports motivation appeared with age in that fitness-health motives and those concerning recreation and relaxation, and with girls also aesthetic motivation, became more important with age and competition became less strong a motive. Sports motivation was measured also using Kenyon's six scales of attitude (Kenyon 1968) toward physical activity (Telama & Kostiainen 1975). In figure 6 differences between grades and between boys and girls in Kenyon's scales are illustrated. Competition and excitement are more important for boys than girls, and girls appreciate more than boys the aesthetic activity.

When those pupils who engaged in physical activity at least 2-3 times a week were compared with those who were less interested, the greatest difference was noted in competitive motivation. The physically active pupils considered competition more important than did less active pupils and the difference increased with age. Engström (1972, 118) has observed the same phenomenon in Sweden.

Pupils were also asked about factors that tend to discourage physical activity (Telama & Kostiainen, Toivonen, unpublished). Such factors are on the whole the same among pupils and adults. Most frequently were mentioned homework, lack of time, other interests, tiredness due to school, lack or distance of sport facilities. The importance of the lack of time and the amount of homework as factors restricting physical activity increases with age, which lends support to what earlier has been said about the reasons for the decrease of physical activity with age.

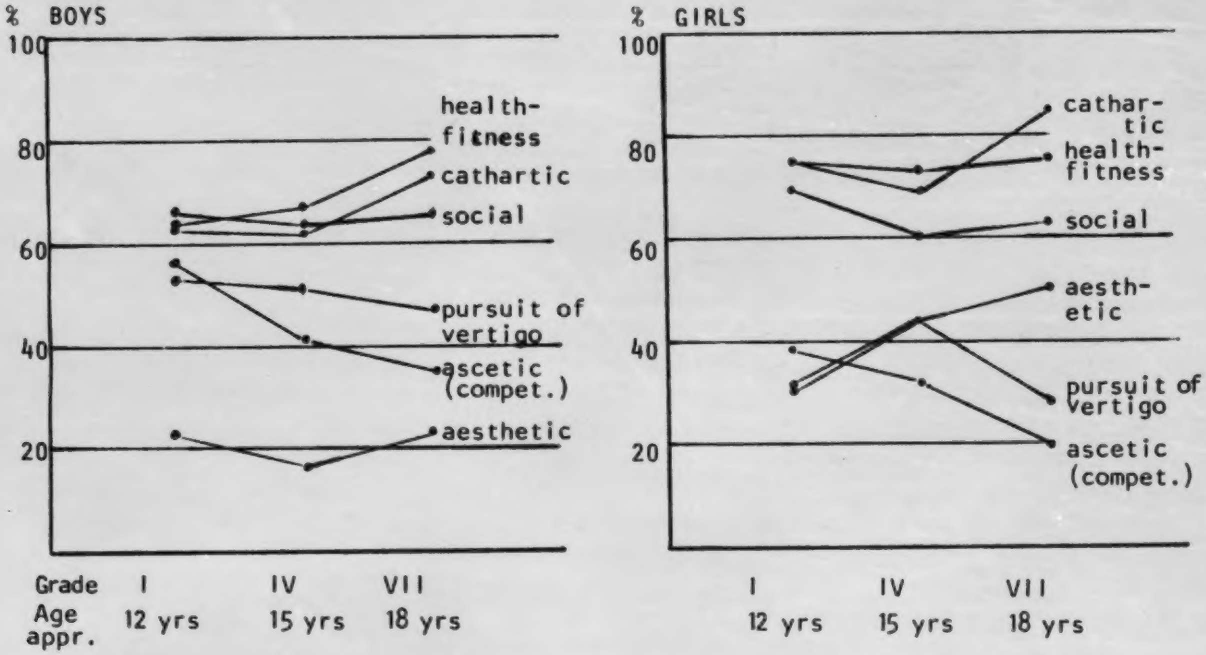

FIGURE 6. Sports motivation measured by Kenyon's attitude scales toward physical activity by sex and grade (Telama & Kostiainen 1975). The percentages of those who have been interested in physical activity much or very much as a social, ascetic, aesthetic, cathartic experience or experience of health-fitness and vertigo (Kenyon 1968).

4. DISCUSSION

Skandinavia is a relatively homogenous region with regard to climate, geographical location and even culture. This region offers interesting, possibilities for co-operation in research on physical activity and sport behaviour. In my talk I have by means of some descriptive data and simple comparisons presented some similarities in pupils' interest and attitudes towards physical activity. Such surveys of similarities and differences in physical culture are necessary but once they have been carried out we might start co-operation in terms of more demanding and sophisticated projects. I hope that this symposium might give impetus to such co-operation.

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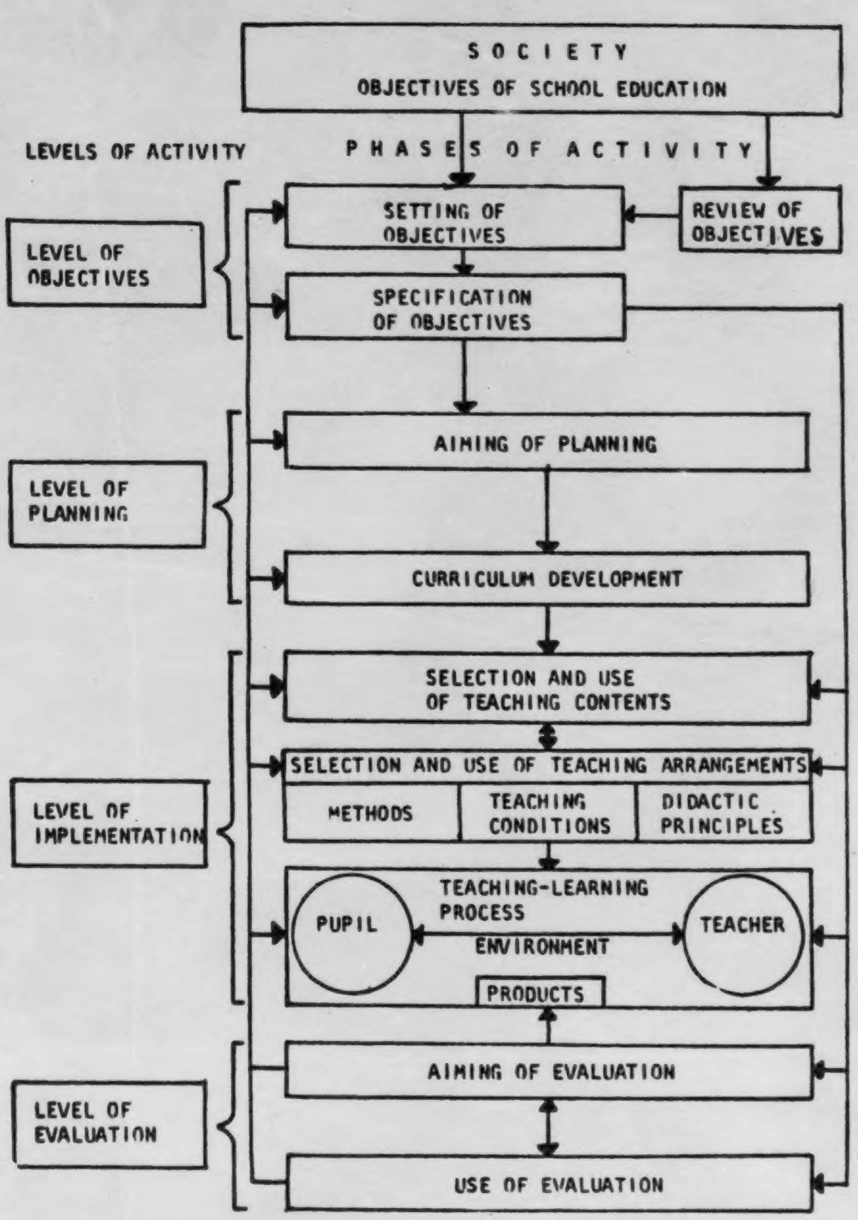

SOCIETY
OBJECTIVES OF SCHOOL EDUCATION
LEVELS OF ACTIVITY
PHASES OF ACTIVITY
SETTING OF OBJECTIVES
REVIEW OF OBJECTIVES
LEVEL OF OBJECTIVES
SPECIFICATION OF OBJECTIVES
AIMING OF PLANNING
LEVEL OF PLANNING
CURRICULUM DEVELOPMENT
SELECTION AND USE OF TEACHING CONTENTS
SELECTION AND USE OF TEACHING ARRANGEMENTS
METHODS
TEACHING CONDITIONS
DIDACTIC PRINCIPLES
LEVEL OF IMPLEMENTATION
TEACHING-LEARNING PROCESS
PUPIL
TEACHER
ENVIRONMENT
PRODUCTS
AIMING OF EVALUATION
LEVEL OF EVALUATION
USE OF EVALUATION

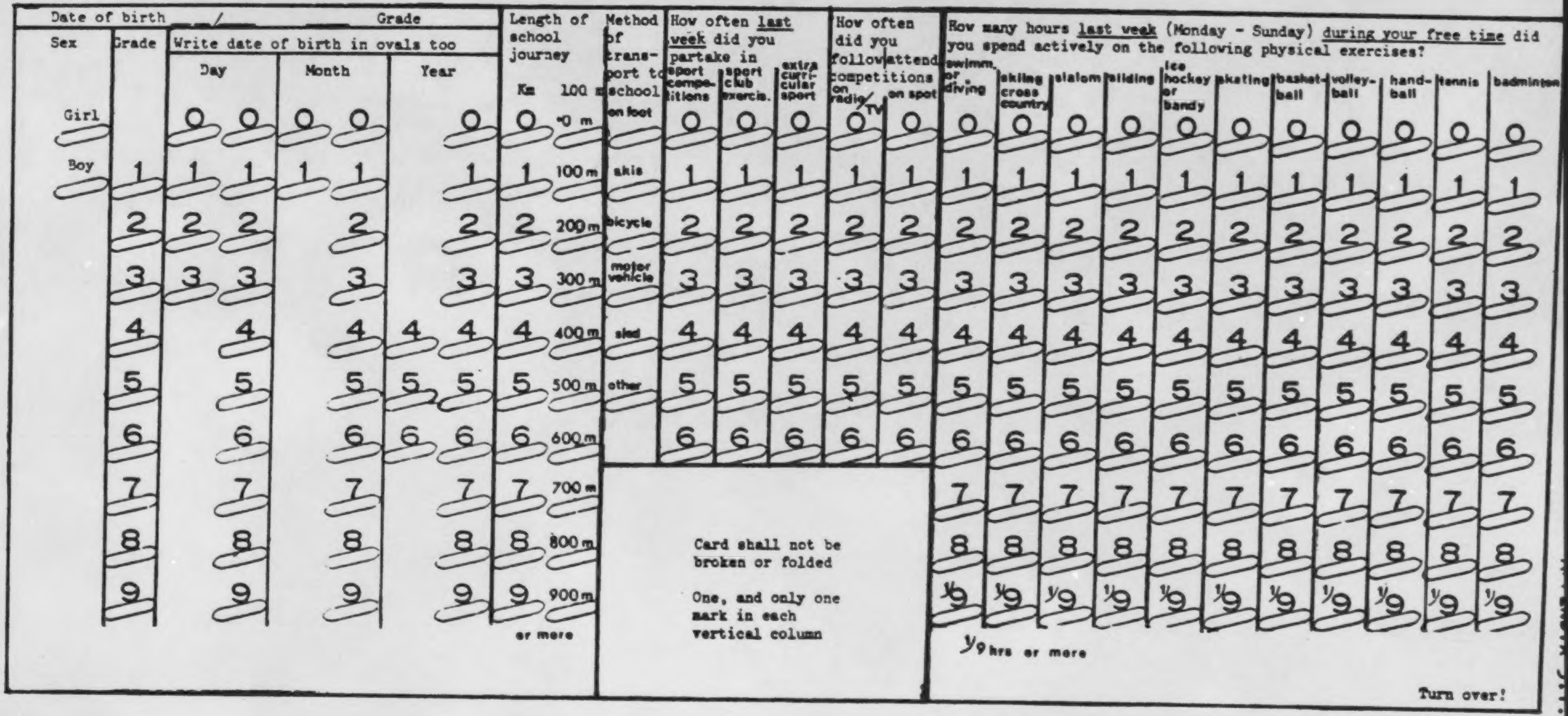
Internal framework of school physical education (Nupponen 1976a).

Frequency of leisure time physical activities of Finnish pupils by sex and age.

FREQUENCY (At least haft an hour at a time)	AGE 10	11	12	13	14	15	16	17	18	Total
BOYS										
Every day	36	36	46	41	28	22	20	14	3	26
2-6 times per week	52	33	36	30	41	45	46	49	52	42
Once a week	9	24	11	15	15	16	18	19	25	17
2-3 times per month	0	4	0	8	7	5	7	8	7	6
Once a month	0	1	1	2	3	3	2	2	2	2
Occasionally	3	0	1	2	4	3	3	4	5	3
Not at all	0	3	6	2	2	6	4	6	7	4
%	100	100	100	100	100	100	100	100	100	100
N	33	78	117	180	225	247	226	143	69	1318[1)]
GIRLS										
Every day	36	27	38	29	38	28	24	22	13	29
2-6 times per week	31	40	39	37	34	40	47	43	53	40
Once a week	22	15	16	20	15	19	15	19	18	17
2-3 times per month	3	0	2	5	5	4	4	7	7	4
Once a month	3	7	2	2	3	2	5	3	4	3
Occasionally	6	2	1	2	2	3	2	1	2	2
Not at all	0	9	2	6	2	3	4	5	4	4
%	100	100	100	100	100	100	100	100	100	100
N	36	56	130	194	251	274	221	163	63	1382[1)]

[1)] In this table younger than 10 yrs and older than 18 yrs (51 boys and 35 girls) are excluded.

Questionnaire printed on the mark sense card; from side of the card
(English version, magnified size. Normal size = IBM's standard punch card).



Date of birth __ __/____ ____ Grade

Write date of birth in ovals too

Sex	Grade	Day		Month		Year		Length of school journey Km	100 m	Method of transport to school
Girl		0	0	0	0		0	0	0 m	on foot
Boy	1	1	1	1	1		1	1	100 m	skis
	2	2	2		2		2	2	200 m	bicycle
	3	3	3		3		3	3	300 m	motor vehicle
	4		4		4	4	4	4	400 m	sled
	5		5		5	5	5	5	500 m	other
	6		6		6	6	6	6	600 m	
	7		7		7		7	7	700 m	
	8		8		8		8	8	800 m	
	9		9		9		9	9	900 m or more	

How often last week did you partake in / How often did you follow/attend competitions

sport competitions	sport club exercis.	extra curricular sport	follow competitions on radio/TV	attend competitions on spot
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6

Card shall not be broken or folded

One, and only one mark in each vertical column

How many hours last week (Monday - Sunday) during your free time did you spend actively on the following physical exercises?

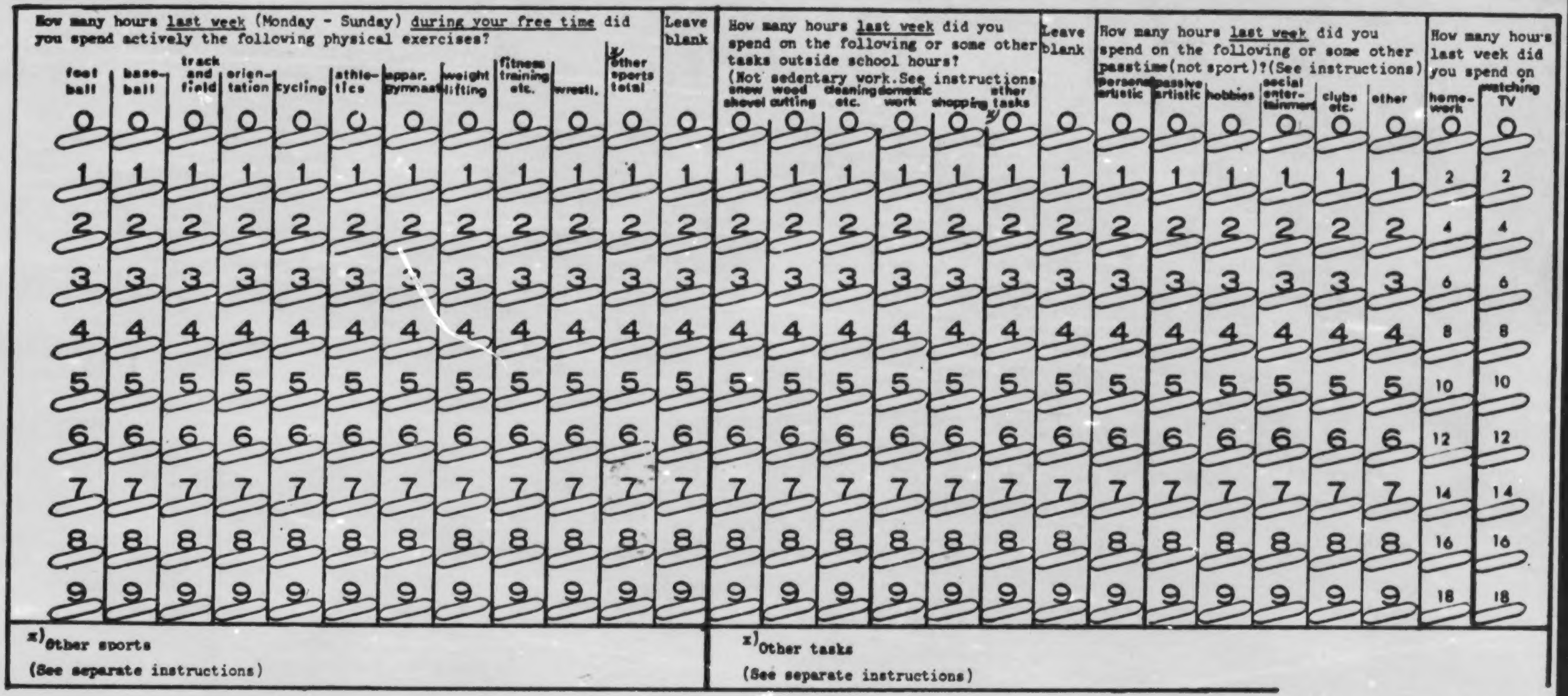
swimm. or diving	skiing cross country	slalom	sliding	ice hockey or bandy	skating	basketball	volleyball	handball	tennis	badminton
0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8
y9	y9	y9	y9	y9	y9	y9	y9	y9	y9	y9

y9 hrs or more

Turn over!

JY no 5/500/9.70

Questionnaire printed on the mark sense card; back side of the card.



How many hours last week (Monday - Sunday) during your free time did you spend actively the following physical exercises?											Leave blank	How many hours last week did you spend on the following or some other tasks outside school hours? (Not sedentary work. See instructions						Leave blank	How many hours last week did you spend on the following or some other passtime (not sport)? (See instructions)						How many hours last week did you spend on	
foot ball	base-ball	track and field	orien-tation	cycling	athle-tics	appar. gymnast	weight lifting	fitness training etc.	wrestl.	x) other sports total		snow shovel	wood cutting	cleaning etc.	domestic work	shopping	x) other tasks		personal artistic	passive artistic	hobbies	social enter-tainment	clubs etc.	other	home-work	watching TV
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	6	6
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	8	8
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	10	10
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	12	12
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	14	14
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	16	16
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	18	18

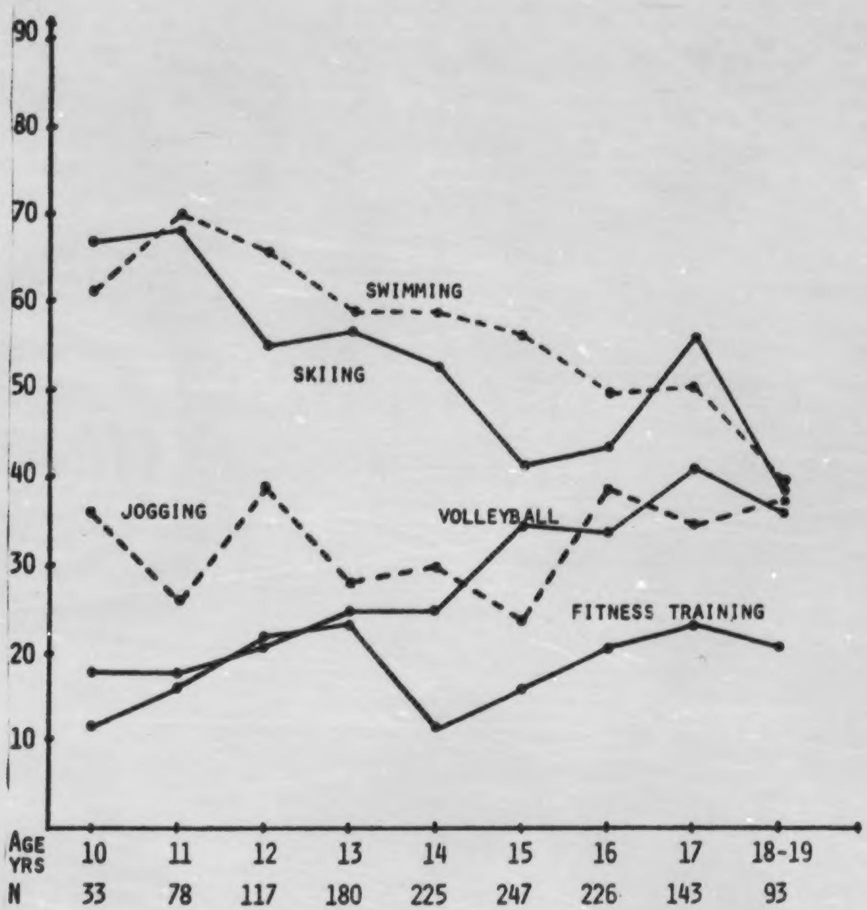
x) Other sports

(See separate instructions)

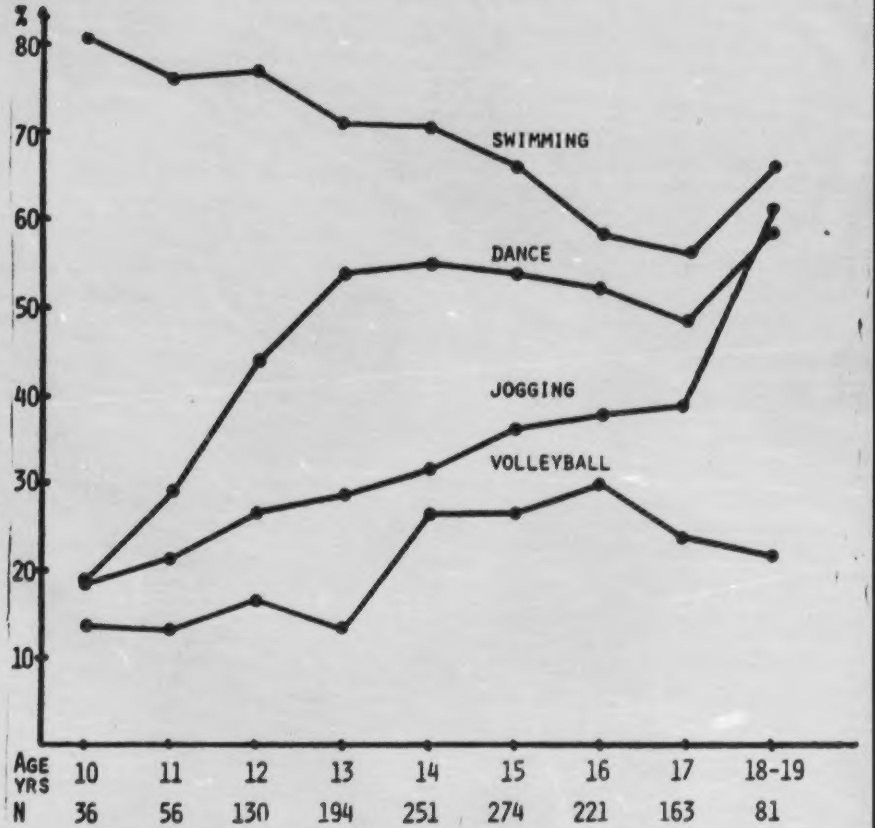
x) Other tasks

(See separate instructions)

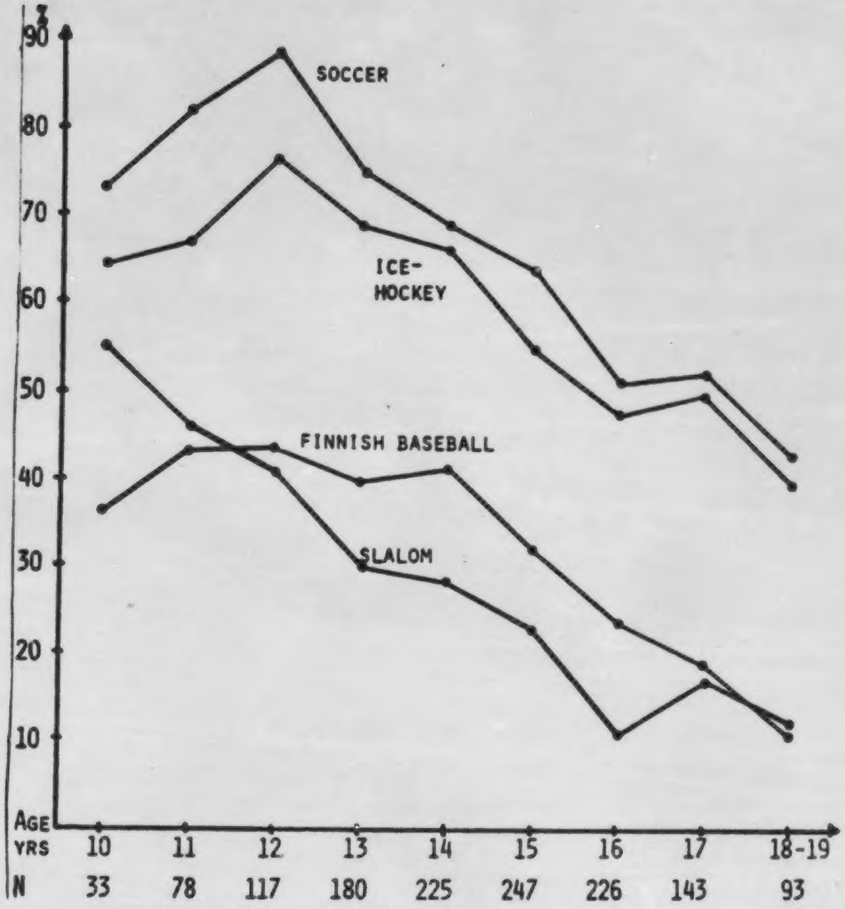
Jy no 89/500/4.71



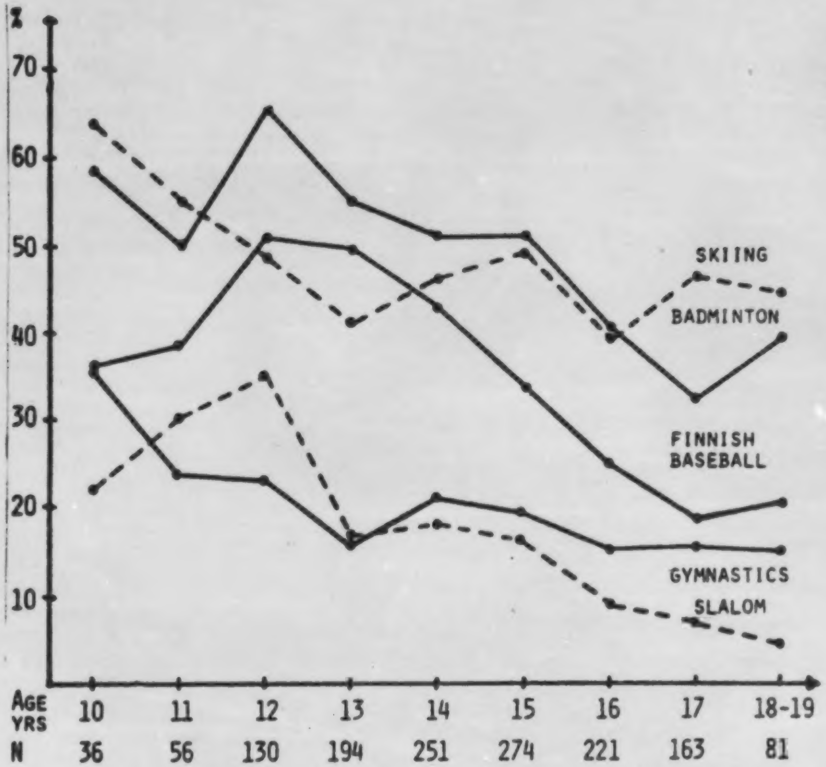
Boys' participation in swimming, skiing, jogging, volleyball and fitness training. Percentages of those who have participated regularly at least once a week.



Girls' participation in swimming, dance, jogging and volley ball. Percentages of those who have participated regularly at least once a week.



Boys' participation in soccer, ice-hockey, Finnish baseball and slalom. Percentages of those who have participated regularly at least once a week.



Girls' participation in skiing, badminton, Finnish baseball and slalom. Percentages of those who have participated regularly at least once a week.

3. RESEARCH PROJECT ON POPULATIONS' SPORTING BEHAVIOR

The lack of information on the Finnish population's sporting behavior has been realized for several years. Even decision-makers have paid attention to this lack, which manifests itself by the fact that the Advisory Council for Research on Physical Education has in its 1971 and 1975 research policy programmes presented research into the population's sporting behavior and physical behavior as the most important fields of study in the near future.

In 1975 for the first time the Ministry of Education provided money to the Research Institute of Physical Culture and Health for the planning of a research project on population's sporting behavior and at the beginning of 1977 the investigation was started again with the financial help of the Ministry of Education.

The purpose of the research project on population's sporting behavior is to produce information on man's physical activity in relation to those individual psychological, social and environmental factors, which determine and change physical behavior in Finland, as well as to develop a frame of reference of these factors. The goals of the said project could be expressed as follows:

1. The qualitative and quantitative reporting of the population's sporting behavior, as well as the reporting of the population's sporting behavior prerequisites and the factors affecting them.
2. Investigation of the population's motivation for sports.
3. Development of a theoretical frame of reference of sporting behavior
4. Development of a follow-up system for sporting behavior

So far the project has been realized so that in 1975 and 1976 dryruns have been carried out, measuring methods have been developed and the actual study has been planned. During 1977 data on first research task (survey of the population's sporting behavior was collected.

A random sample of 3985 persons was taken from the population register, which represents the 16 year-old Finnish population. The sample was stratified regionally and according to the urban/rural division. Questionnaires through the mail were used in data collecting, and the rate of response was 78 per cent.

An attempt will be made to start investigating the second research problem, i.e. motivation of the population, in 1978 as well. The purpose of this part project is to investigate the motives, limitations and development of sporting behavior as well as factors affecting them. Data collecting will be carried out by interviewing a representative sample of the Finnish grown-up population, who will be asked for a physical check-up in a research institute.

The purpose of the follow-up study system of sporting behavior is to disseminate information on the possible changes of activity among the population, and the effects of different physical educational policies on these changes.

In addition to the previous the research project on population's sporting behavior includes several sub-projects, of which the following should be mentioned:

1. The effects of mass media on the population's sports activity.
2. Sporting behavior of special groups.
3. The effects of directive information dissemination and education on the sports activity of the population.

The research project is carried out in collaboration with the Department of Physical Education, University of Jyväskylä.

Pekka Kiviaho

PHYSICAL ACTIVITY OF THE FINNISH ADULT POPULATION

Scandinavian Conference "Symposium om Idraetsadfaers",
Copenhagen, 17-19.3.1977

The purpose of this report is to summarize and describe physical activity and especially participation in leisure time physical activity and sport in Finland. First I will give some background information about this kind of research in Finland and after that a short overview of physical culture in Finland. Then I will describe some characteristics of participation and finally the role of sport as a part of leisure time physical activity.

Structural changes in the Finnish society and sport culture

Like in other countries collecting of this kind of data is the result of development of only the last two decades in Finland. Interest in surveying people's physical activity and sport behavior has not been brought about by chance or in social vacuum but is due to different simultaneous factors. Such external and internal factors in physical culture can in this connection only be briefly noted because we do not have any full account of the problem.

The following factors should, among others, be mentioned among external factors having influence on physical culture. First, changes in the structure of production, industrialization and semiautomatization, which have affected post-war structural changes especially strongly in Finland, have reduced the physical load of work markedly. At the same time, mechanization, unvoluntary and forced pace and haste at work have intensified workers' physical stress and increased the share of degenerative diseases in the total picture of public health.

Simultaneuously accidents at work, absence from work and retirement because of work disability become more general and have increased the need for work safety and maintenance of physical performance capacity. This trend in the condition of health of people has brought about discussion, because the development of productive forces does not seem recently to have produced an equivalent and previously so frequently observed reduction of illness. On the other hand, there have been changes in the structure of morbidity. The treatment of various degenerative diseases and diseases of cardiovascular and musculoskeletal system have set in as central problems, and it seems that traditional medicine are not so efficient and successful as methods of preventive medicine. These objective factors have directed attention to the maintenance of physical performance capacity and actualized and made more necessary the health care methods aiming at prevention than ever before. Voluntary physical activity during leisure time has been seen as a cure just for this problem. Also different organic functional disorders (hypokinetic symptoms and diseases) have been assumed to be due to a lack of sufficient physical activity (Kraus & Raab 1961).

Another reason connected with social change that has created an interest in people's physical activity has been the rise in the standard of living and the increase of leisure time. Lengthening of leisure time is related to the rise of productivity of work. However, improved productivity has been attained as a result of powerful mechanization and rationalization. This has in many cases meant, as we noted before, a reduction of physical load at the expense of psychic stress. At the same time, it is asserted that also job satisfaction has diminished - work is felt as meaningless and alienating. It is proposed to compensate for these working conditions by means of leisure time activities, especially in the form of physical activity, which has been thought to have beneficial, meaningful and useful effects on people's welfare (other than health) and comfort.

A third factor related to the first two is the growing need for planning, which has appeared in all fields of social life. Concrete knowledge on man's physical activity and sport behavior is seen important in the planning of community structure, especially in regional planning for allocating sufficient and purposeful outdoor areas but also in housing and traffic planning.

In addition to external social effects, also internal factors of sport and physical culture have accelerated this increase of interest. Post-war Finland was not a super power in competitive sports in the same way any more as before the war (this in spite of our good success in proportion to our population size in our "own" events in international competitions). The trends were more favourable for us before the war. Yet climate of opinions has always been positive for competitive sport and sportslike activities in all population groups, also among intellectuals, but it has turned positive also towards the physical fitness drive for the majority of people in 1960's and 1970's. The most significant post-war change in Finnish physical culture appeared in 60's, people's attitudes changed and were consciously changed to become more positive to mass physical culture, which responds better to the needs of a new industrialized state. At the beginning, there were even controversies between conservatives in favour of competitive sport and people who stressed more sport-for-all. Nowadays the controversies have, however, cooled down almost entirely with the generation shift of leaders of sport organizations. It was quite remarkable that although the Workers' Sports Federation (TUL) has emphasized the importance of mass sport even at the expense of competitive sport during its entire exinstence, it participated in bringing forth this change of bourgeois consciousness in sport and physical culture only marginally. The change was propagated especially by bourgeois liberals, university teachers, intellectuals etc. For example at the end of 60's, only one person representing the TUL was member of a state committee dealing with sport-for-all (Kuntoliikunnan ... 1970). Still change of situation and attitudes resulted in the establishment of many organizations for physical fitness in our country. Such organizations began to receive state support, but nevertheless they have - almost without exception - been and worked in symbiosis with national central sport federations without independent organization for the whole country.

Researchers, as usual, become interested in this phenomen only at a later date, and as a kind of fad, people's physical activity has received growing attention. Consequently the state commission for research in sports sciences has defined it as one of the central research fields in the near future in its programme for research policy (Liikuntatieteellisen ... 1975).

For all that, no extensive survey has yet been made covering the habits of physical activity and outdoor recreation of the whole population. That is why the following discussion must be limited to giving an overview of physical culture in the Finnish society at the cross-sectional period at the turn of the 60's. The references are not meant to cover all studies and research made in this field in Finland. What is important in this context is the general overview and the structure of physical activity. On the other hand, I am not going to carry out a coherent analysis of the problem area. We are not theoretically ready for that. Rather I will try to give some illustrations on some basic features of physical activity in Finland as compared with other Nordic countries when it is possible.

Overview of Finnish physical culture

Sport as a social institution or as an element of culture is involved in many different ways and at many levels. Individual involvement can mean active participation in sport-for-all or competitive sport as "passive" consumption of sport, at the areas of competition or through mass media. This rough division has been followed when data indicating the absolute and relative amounts of those involved in sport have been presented in Table 1 which illustrates the cross section situation of the year 1971 1).

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1) The data (Tables 1 and 2) are based on interviews by the Finnish Gallup in 1971. The sample (N=1073) was representative of the Finnish population over the age of 15 concerning sex, age, social group and location of residence.

Active participation in sport and leisure time sport varies greatly according to the aim or intensity of participation. There is only less than one per cent of the population that can be classified as belonging to top-level (elite) athletes that is about 15000 participants, mostly men, but competitive sportsmen as much as 6 per cent that is about 200000 participants.1) Almost half of the population (that is 1.5-2.0 million) are participants in sport-for-all and outdoor recreation. Concerning this latter group, sex does not seem to have a significant influence on the amount of participants.

The consumption of sport, which is practically limited to only a small group of top-level athletes, is naturally smallest at the site of competition and greatest through the press and TV, whose sport reports are read or viewed relatively regularly by two million people in Finland.

Without any further analysis, the above mentioned data gives a picture that indicates, in a sense, the existence of two types of physical culture: on the one hand there is elite sport and its consumption as the most prominent part of physical culture and on the other hand individual involvement in active competitive sport, physical fitness and outdoor recreation.

It should be stressed that the division is here mainly practical rather than theoretical. In fact, the phenomena of competitive sport and sport-for-all overlap and presuppose each to a large extent. Their mechanistic confrontation or separation is indeed partly related to a correct interpretation of the nature of physical culture in free market countries, but this cannot be claimed to be the whole picture

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1) An interview conducted almost in the same way in Norway showed that participants in competitive sport constituted 12 % of the population, which means twice as much as in Finland. This must be considered as a considerable difference (Högseth et al. 1973, 26). The difference might to some extent be due to the fact that the question in Finland concerned only participation in events organized by sport organizations during the last 12 months.

TABLE 1. Active participation in sport and physical activity and consumption of sport among men and women (Source: Kiviaho 1977)

Participation and consumption of sport	Percentage of persons over 15 years of the whole Finnish population			Participants of persons over 15 years		
	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
Active participation in sport:						
Top-level athletics 1)	0.9	-	0.5	14900	-	14900
Competitive sport 2)	10	2	6	166200	36800	203000
Sport-for-all 3)	46	45	45	764500	828000	1592500
Outdoor recreation 4)	61	60	61	1013800	1104000	2117800
Consumption of sport 5):						
At the competition site	17	4	12	299200	73600	372800
Radio	42	27	34	698000	496800	1194800
Press	81	41	61	1346200	754400	2100600
TV	79	56	68	1312900	1030400	2343300
Membership in sportclub:	23	7	16	382300	128800	511000
N	(564)	(509)	(1073)	(1662008)	(1840004)	(3502012)

1) All athletes at least on the "nationallevel" have here been classified as top-level athletes. (There was no women of the national level in the sample.)

2) All persons who at least once during the 12 months preceding the interview had taken part in competitions organized by sports organizations have been classified as competitive athletes.

3) Those who have practised some kind of sport event for improving their fitness have been classified as participants in sport-for-all.

4) Those who have engaged in outdoor recreation during a week preceding the interview have been classified as participants in sport-for-all.

5) Those who have followed at least twice a month.

of physical culture. For practical reasons the following presentation will concentrate only on individual active physical activity in its various forms. The discussion will consequently not deal with sport consumption and sport association membership, although both of them are essential for understanding the Finnish and also the Scandinavian physical culture.

When we analyze further physical activity in the frame of reference described above with the aid of some variables describing social status and the residential environment we obtain the following picture as presented in Table 2.

Only participation in competitive sports is clearly related to sex: men are more active than women. As anticipated, participation in competitive sport decreases with age and younger age groups participate more actively than older ones also in sport-for-all and outdoor recreation. Participation in competitive sport decreases between ages 20-30, in middle age in sport-for-all and in age of retirement in outdoor recreation. Differences of participation in age groups can, however, partially be due to the socialization of youth to more active way of life (in spite of the mechanization and automatization of our culture and life), or should we say, that their more sportlike way of living is due to more effective activities of school and sport organizations. If so, differences between age groups could diminish in the future or, at least, activiness might increase even in older groups.

TABLE 2. Participation in competitive sport, sport-for-all and outdoor recreation in various population groups (Source: Kiviaho 1977)

Demographic, social and ecological background	Competitive sport %	Sport-for-all %	Outdoor recreation %
Sex:			
Men (N=564)	10	45	60
Women (N=509)	2	46	61
Age:			
15-24 (N=227)	14	53	67
25-34 (N=206)	8	54	60
35-49 (N=278)	5	44	64
50- (N=362)	1	36	55
Professional status:			
Farmers (N=239)	3	38	53
Industrial workers (N=492)	7	40	58
Clerical (N=342)	7	58	70
Size of community:			
Big cities (N=159)[1)]	5	45	59
Other cities (N=344)	7	48	60
Rural communities (N=534)	6	44	62
Region:			
Industrial Finland (n=618)	7	46	60
Other parts of Finland (N=455)	5	45	62

[1)] Helsinki, Turku and Tampere

Clerical workers are the most active participants in individual leisure time physical activity and farmers the least active, and workers occupy a middle position. The influence of location of residence and of the living environment on the degree of active participation in sport and physical activity is reflected in differences between the degree of urbanization of different communities. Differences are rather small in absolute terms, but consistent in the case of competitive sport and sport-for-all. Participation is more active in middle-size towns and industrial Finland than in big cities and rural areas or in non-industrialized parts of Finland. The social structure and climate of communities may have an influence on activity of participation. The structural heterogeneity of big cities and rural areas do not seem to create equal possibilities for participation in physical activity in comparison to the more homogenous middle-size cities.

It seems that a person will participate more likely in sport, sport-for-all and outdoor recreation if he has a relatively high professional and social status and lives in middle-size cities. Knowing that the proportion of these persons increases for reasons of migration and rising educational level, it follows that also demand for services in sport-for-all and outdoor recreation has still undergone a period of natural growth.

Characteristics of participation in sport

Participation in sport and leisure time physical activity - whether as competitive sport, sport-for-all or even outdoor recreation - means participation in one or more than one sports event, and events cannot be equated as forms of activity. This can be seen in Table 3 where competitive events practised during the whole life span and sport-for-all events during the cross-section time is given in order of preference in men's and women's groups.

Nearly same events (jogging, skiing, swimming and volleyball) are practised both as competitive sport and activities to improve physical fitness. Also difference in participation and preferences between men

TABLE 3. Participation in some sport events as competitive sports and sport-for-all (Source: Nurminen 1969a, Appendix 2, 2-42; Kiviaho 1977)[1)]

Competitive sport				Sport-for-all			
MEN	%	WOMEN	%	MEN	%	WOMEN	%
Track and field	24	Track and field	16	Walking, jogging	46	Walking, jogging	55
Skiing	23	Skiing	14	Swimming	38	Swimming	38
Finnish baseball	12	Cycling	11	Skiing	32	Cycling	35
Volleyball	9	Swimming	9	Volleyball	27	Skiing	35
Swimming	8	Gymnastics	8	Cycling	24	Gymnastics	26
Orienteering	8	Finnish baseball Volleyball Badminton	7	Badminton	21	Badminton	22

[1)] The subjects were asked to choose one of the following alternatives in each event:
1. I participate or have earlier participated in competitive sport
2. I participate in sport for physical fitness personally

and women are small in regard to competitive sport and sport for fitness. Figures describing the amount of participants do not, of course, only describe the popularity of each event, but in case of competitive sport and sport-for-fitness, they are determined by possibilities for participation and socialization, for instance in schools and, to some extent also by supply of possibilities and facilities.

Although data of this kind do not give good possibilities for comparisons between different countries, it is possible in certain events. Results are not, however, ever fully comparable because of many variations in the representativeness of samples, the formulation of questions and the timing of studies. However, it is possible to have a tentative overview of the situation in different countries. The following is a table of results of interviews carried out with representative samples in Finland, Sweden and Norway.

TABLE 4. Participation in some events in Finland, Sweden and Norway (Source: Finland, Nurminen 1969a, Appendix 2, 2-42; Sweden, SOU 1963, 39-43; Norway, Högseth et al. 1973, 12)

Events	Finland[1] %	Sweden[2] %	Norway[3] %
Walking or jogging	50	52	54
Swimming	38	25	24
Skiing	33	32	32
Cycling	29	26	17
Volleyball	23	-	3
Gymnastics	22	21	18
Badminton	21	-	6
Track and field	11	6	4
Football	10	26[4]	9
Table tennis	10	-	2
Finnish baseball	10	-	-
Orienteering	8	6	3
Shooting	8	7	-
Basketball	7	-	1

[1] The sample represents population over the age of 15 and the data presupposes participation vs. non-participation.

[2] The sample represents urban population of ages 18-65 and the data presupposes participation at least 3 times a year.

[3] The sample represents population over the age of 15 and the data presupposes participation vs. non-participation.

[4] The figure also includes participants in other ball games.

Most commonly practised forms of physical fitness exercise, those which are easy to pursue alone or in small groups, do not require expensive equipment or facilities and demand only basic skills in sport. Also differences between men and women are very small in these events. Also events of the second group are still quite easy to master, but difficulty involved in acquiring adequate performance skill, extended time of exercise needed for skill acquisition and requisite physical performance capacity distinguish them from the most commonly practized events. In these events, differences between sexes are more pronounced than in events of the first group, too. All of these are followed by events practised by a relatively small number of participants and demanding special conditions, such as riding, downhill skiing, car rally, tennis, sailing, etc., many of which can also be called elite sports events on the basis of the social status of their participants (Kiviaho 1977).

Many popular outdoor pursuits which are not classified as sporslike physical activities or sports and which are not practised with similar aims can well be compared with events mentioned before in terms of their value as physical activity. For comparison, the popularity of some other voluntary leisure time activities demanding physical activity are briefly described in the following (Table 5). It is worth drawing attention to the fact that they are approximately as popular as the most popular forms of physical fitness and, at least in Finland, participation would seem to be more evenly distributed according to sex and social class than in most sports events (Kiviaho 1977).

TABLE 5. Participation in some outdoor activities in Finland, Sweden and Norway (Source: Finland, Nurminen 1969a, Appendix 1, 15-16; Sweden SOU 1963, 39-43; Norway, Högseth et al. 1973, 12)

Events	Finland %	Sweden %	Norway %
Fishing	28	25	54
Hunting	31	37	
Picking berries	50	79	
Picking mushrooms	35		-
Motoring (car)	33	62	-
Gardening	28	48	-
Dance	18	14	15

As can easily be seen from the tables presented in the above differences in participation in different events are very small when the three countries are compared with each other. Differences might partly be due to differences in the interviews and to differences in the timing of the studies, but they can also be partly explained by actual differences in the physical culture of different countries. These comprise, for instance, the difference in participation in volleyball, basketball and track and field, where the difference is accounted for their traditionally great popularity in Finland. The orienteering figures are, on the contrary, difficult to explain. Although the event is popular in Finland and its popularity is rapidly increasing, one would expect that participation figures should correspond with each other as consistently as in the case of skiing.

At the end of this section, it should still be briefly reminded that in the same way as participation in sport and leisure time physical activity in general depends on sex, age and social status, the participation in different events are selectively determined by demographic and structural-social factors also in the Nordic countries (von Euler 1953, Kiviaho 1971, METELI 1975, 59). Consequently many events even today are 'suitable' only for men, although the number of such events is on the decrease. Also many typical competitive events have their peak number of participants in youth (e.g. ice-hockey, basketball) whereas some events have participants still on the threshold of middle-age (volley-ball, badminton, gymnastics) and some are popular in all age groups (skiing, cycling, swimming) (Kiviaho 1977). It is equally evident also that tennis, riding and sailing have their strongest support among the upper strata and that football and typical strength sports are popular with the lower strata. Unfortunately we do not yet know much about this kind of selectiveness or what it means to individuals and different social groups.

Sport activity as part of leisure time physical activity

The frequency of sport activity in Finnish (and Scandinavian) "mean population" has been described in the above. The description does not tell, however, what part sport activity plays in the habits of the population or of different population groups, how much time is spent daily on sport activities and how sport insterest is related to other forms of time expenditure?

According to the METELI[1] project, which was carried out among employees of three metal factories in one community (in Finland), sport activity - when related to the use of time in general - is strongly concentrated to the weekend both among men and women (Table 6).

TABLE 6. *Use of time during weekend among men and women (Source: METELI 1975, 267-268)*

Forms of time expenditure	Weekday				Weekend			
	MEN		WOMEN		MEN		WOMEN	
	Min	%	Min	%	Min	%	Min	%
Sleeping	461	33	460	32	547	38	559	39
Eating and hygiene	133	9	145	10	149	11	156	11
Work	514	36	496	35	72	5	31	2
Home chores	61	5	151	11	136	10	241	17
Sport	29	2	21	2	104	7	77	6
Active interest	80	6	60	4	78	6	65	5
Other	164	11	109	8	357	25	312	22

On weekdays men spend about 30 minutes and women 20 minutes on sport, which means in men 2 % and in women 1.4 % of the total available time and 10 % vs. 11 % of available leisure time, respectively. At weekend men use more than an hour and a half and women more than an hour or 7 % vs. 5 % of the day (24 hrs) and 19 % vs. 17 % of leisure time, respectively. If we consider only those with an active sport interest and their use of time, we can observe that the share of sport on weekdays rises to more than an hour among men and to almost one hour among women, and at weekend to about 2.5 hours in both groups, as will appear from the following set-up (Source: METELI 1975, 169):

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[1] METELI is a research project financed with grants by the Academy of Finland and the Ministry of Education. Its purpose is to study the working conditions, state of health, and physical activity of the employees in the machine industry and their relationships with some individual and social factors. The project is carried out as a joint effort of various departments of the University of Jyväskylä and the Research Institute of Physical Culture and Health.

Time of measurement	Number of persons engaged in sport %		Time spent on sport min/24 hours	
	MEN	WOMEN	MEN	WOMEN
Weekday	40	37	73	56
Weekend	67	54	156	145

The proportion of sport out of physical activity outside work[1] among men is on the average 18 % and 12 % among women, the leisure time being distributed as follows (Source: METELI 1975, 269)

Physical activities during leisure time	MEN %	WOMEN %
Sport	18	12
Home chores	19	37
Journeys to work and back	3	4
Other activities	60	46
Total	100	100

Quantitatively the share of sport is not very great from the point of view of total energy expenditure compared with other physically active leisure time activities - home chores, journey to work and other physically active forms of interest. At least in principle it might be considered that a daily physically active journey to work is a substitute for activity during work and leisure, particularly, since it applies to more people than the sport interest during leisure. It appears, however, that this does not happen to any large extent, because possibilities for a physically active journey to work seen to vary in the same way as active interest in sport during leisure time. Those persons who actively engage in sport during leisure are also physically active during the journey to work (METELI 1975, 99). As regards home chores, physical activity is very limited and often one-sided, so it can hardly compensate for lack of adequate exercise during leisure time. Furthermore, it should be stressed that among women home duties actually prevent active interest in physical exercise during leisure time (METELI 1975, 108). Physical activity at work usually cannot compensate for leisure time activity since it is often one-sided and too light. In addition to this the work load among metal workers were mostly moderate and physically heavy only for 16 % of men and 6 % of women.

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[1] The interview of physical activity was carried out in two stages. First, persons marked in a check list what activities they had pursued during the previous 12 months. In an individual interview the subjects were asked how much time on the average they had spent on each activity, how often and how intensively they had engaged in the activity. Using these data various indices of physical activity were computed, and they have been roughly related to the consumption of energy by means of indices Indicating a mean consumption of energy in each type of activity (METELI 1975, 172).

It should again be remembered that the results above are averages, which also include those who have no interest in physical exercise. On the other hand, it should be kept in mind that the amount of activity as such does not describe the physiological and health effects of physical exercise but the type and intensity of exercise should also be taken into account.

Physical activity should recur a given minimum number of times per a unit of time and be of sufficient intensity. It is often presented by physiologists that if physical activity is to have an effect on the cardiovascular system and the muscles it must be regular (2-3 times a week) and lead to perspiration and becoming out of breath. To what extent this kind of "sufficient" exercise is carried out in relation to the total amount of physical exercise can be appraised from the following set-up in which some of METELI findings are presented.

	MEN %	WOMEN %
Physical ecercise as an outdoor recreation: at least twice a week1)	45	51
Physical exercise as fitness training2)	36	19
Vigorous physical exercise: at least twice a week3)	19	10

1) active participation vs. non-participation

2) active participation vs. non-participation, with a view to improving physical fitness

3) the variable describes active participation in some vigorous events (swimming, ice-hockey, fitness club etc.)

Although about one half of the people go in for physical exercise as an outdoor recreation and one third of men even for physical fitness and fifth of women, only less than one fifth of men and one tenth of women engage in vigorous physical activity at least twice a week. In order to achieve the desired impact on public health it appears necessary to give attention not only to the direction of activity but also to the amount and intensity of exercise. On the other hand, it is ultimately a question of optimal performance capacity, which means that the training programme should be optimal from the point of view of each person's state of health, age, use of time, and life habits (e.g. Kiviaho 1977).

Discussion

The physical activity of population has lately gained attention both in public opinion and in different organizations. Also the state has been interested in this program area by commissioning some committee reports which deal with the issue (Kuntoliikunnan .... 1970; Virkistys... 1973). Concentrating mostly on the questions of principle or juridical issues these have had a special meaning by changing public opinion and creating a favourable climate for mass sport culture. On the other hand the reports have paid attention to those organisational and institutional preconditions which are necessary for preserving and creating adequate sport conditions.

As stated before data concerning the physical activity of the population has been gathered more regularly than before, but in no way systematically, in different contexts from the late 60's. The results have, however, been fragmentary facts on the ground of which it is difficult to build up any kind of systematic picture of the whole. Just due to the lack of planning and co-ordination of research, the major part of the facts are poorly representative either regionally or in terms of the measurements of physical activity. On the other hand, some representative samples of the entire population have been so small that in descriptions one has had to be satisfied with such averages which are too general or even misleading especially in Finland because of large regional differences. The most serious defects in the describing and mapping of physical activity are at present associated just with the problems of regional differences and regional inequalities. In a further analysis it is planned to continue in this direction[1].

In addition to what has been said before there are naturally other gaps in our knowledge of physical activity which have to be mapped and to be studied in a near future. The mapping is the first stage of the chain of studies on physical activity which has to be continued in a direction of explanation and theory construction.

The culture-bound nature of the study of sport and physical activity is more evident, than let us say the study of its biological effects, due to the differences in the organization of physical culture and sport, economic possibilities of countries, organizational structure of sport associations, etc. Because of this, national research is a necessity, it is not possible to import knowledge from abroad. On the other hand the cultural and economic differences among Nordic countries are not so many that co-operation and exchange of research information can be regarded as necessary and fruitful for all.

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[1] The Research Institute of Physical Culture and Health has initiated a research project on the physical activity of the Finnish population, the aim of which is to gather basic data of regional differences and inequality in sport, physical activity and recreation.

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Ulla Lahtinen

PHYSICAL FITNESS AND PSYCHOMOTOR PERFORMANCE OF MENTALLY RETARDED CHILDREN

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1. INTRODUCTION

The services of non-institutional care for the mentally retarded are being planned and improved in Finland. For the mentally retarded, non-institutional care means a wider social participation. It can enable them to cope with the activities of daily life both at work and during their leisure time. It has been estimated that more than 50 % of all mentally retarded can hold gainful employment following education and rehabilitation.

Heretofore, research in physical fitness and psychomotor performance has not properly addressed the problem of "practical" education for the mentally retarded. Investigations have focused on the mildly retarded, perhaps because it is easier to use the standardized tests for normals on this population. The result is that the more severly retarded have been ignored and few tests specifically designed or adapted for the mentally retarded are available. Consequently, the development of physical education and leisure time activities has been routinely ignored in the services of non-institutional and institutional care.

This study employs new and adapted testing procedures to examine the physical fitness and psychomotor performance of mentally retarded children, with special attention to the needs and health risks of occupational work and leisure time activity.

2. SUBJECTS

The investigation focused on 11 to 16-year-old mildly or moderately mentally retarded girls and boys from the area of central Finland. All were in institutional or non-institutional care and had no movement disturbances or psychoses. Eighty-two per cent (N=77) of this population were tested. The control group consisted of 195 school children of the same age and from the same geographic area.

3. METHODS

Most of the standard tests for measuring physical fitness and motor skills may be adapted for the mildly disabled in general and also for the mildly mentally retarded. However, a problem arises when one wants to measure the physical fitness and motor skills of the more severely handicapped. In order to measure these capabilities and characteristics of moderately or severely mentally retarded persons the tests should be modified to meet the performance level of this particular group.

In selecting the tests and methods for this study, careful attention was given to factors which, according to earlier research, are related to job performance, health and leisure time activities. The nature of work in sheltered workshops for the mentally retarded was also considered.

Of course, the mentally retarded have greater opportunities for employment in manual labor positions. This type of work requires a moderate level of physical fitness. Therefore, strength, running, speed and endurance were investigated, as all are important to general physical fitness and to success in work involving lifting or carrying. Descriptions of these tests are given in Section A of the Appendix. Measuring endurance of mentally retarded requires special arrangements. Problems arise in the areas of coordination, rhythm, understanding, familiarity and motivation. In preliminary trails, the 300 meter run (Fait 1972, Hayden 1964) proved most suitable for this population. In a like manner, the 25 meter run (Fait 1972) was chosen to measure running speed.

To investigate motor performance, tests of gross coordination, balance, exactness of throwing, manual skill, and reaction time were administered. Descriptions of these tests are given in Section B of the Appendix. Lifting, carrying and moving, if performed quickly require gross coordination and balance. Another reason for choosing balance and exactness of throwing is that these skills are characteristic of many leisure time activities. To investigate manual skill, simple tasks - those usually occuring in sheltered workshops - were chosen. The tests required the use of one or both hands, separately or simultaneously, and included grasping, moving, releasing, pressing, threading, and twisting, the most common basic movements according to MTM-analyses (Karger & Bayha 1957).

Growth, weight, obesity and stage of secondary sexual development were measured for comparison to the control group.

4. OBSERVATIONS

Normally, the motivation of the mentally retarded was quite high. Most subjects were so interested in the new tasks and eager to perform that it was often difficult to make them wait their turn. Most popular were ball throwing, balancing and running, which many subjects wanted to repeat several times.

Some of the mentally retarded were shy and reserved often hesitating to try the tests. Particularly shy children were allowed to watch others perform for a period of time, then to try themselves after a lunch break or during the following day. Watching the more active children appeared to stimulate interest, install confidence and, as a result, enhance performance. Getting used to the situation was of particular concern for children in non-institutional care. Institutionalized children were more familiar with testing routines and had fewer adaption problems in that respect.

Every task (with the exception of physically strenuous ones) was practiced until the subject understood it and could perform it correctly, and the results of two successive performances were essentially the same. The influence of practicing and learning on performance was considerable.

It became evident that there are learning potentials in mentally retarded children which can be developed by careful and patient training. All subjects were verbally motivated as much as possible. When motivation ceased, performance deteriorated. Similar motivation of all subjects proved essential to obtaining valid results.

5. RESULTS

The realiability of the methods was determined by repeating the measurements after one week. The reliability coefficients varied in the mentally retarded group from 0.73 to 0.98 and in the reference group from 0.84 to 0.98. Therefore, the stability of the test can be considered as relatively good. Also the high correlations and communalities between the variables suggest good reliability. The mentally retarded were shorter and more obese than the controls. There were no differences in secondary sexual development.

In tests of physical fitness, the retarded children scored lower than the controls, which could be expected. Of particular interest, however, was the relative ability of the various tests to discriminate between the two groups. In this respect, the groups differed most in endurance and muscular strength of the legs, and least in manual and abdominal muscular strength.

The mentally retarded were also less succesful in tests of psychomotor performance, compared to controls. But here the difference between the two groups was more profound, with controls scoring 2 to 3 times higher in tests of balance, reaction time, and some tests of manual skills.

All children were assigned to one of two groups, more independent or less independent on the basis of scores attained on a modified scale for adaptive behavior (Nihira et al. 1963). One might suppose that physical fitness and psychomotor performance are significant factors in an individual's ability to be independent. Discriminant function analysis supports this hypothesis. After IQ and age, manual skills, balance and gross coordination were significant contributors to independence. Muscular strength also has some slight signifinance, but running speed and endurance were not important in this respect.

While the performances of the mentally retarded in the area of physical fitness and psychomotor performance were significantly poorer than those of the reference group, more attention should be paid to the fact that almost all of the mentally retarded could perform the test tasks. Most of them could throw a ball, skip, and run, which gives important information for the planning of physical activities. Most of them also perform the tests of manual skill and gross coordination, which indicates that there exists at least a physical capacity to work.

On the basis of this investigation, most mildly and moderately mentally retarded children appear to have the capacity to satisfy the needs of work and leisure time in non-institutional care. The results can be used to plan school, work and leisure time activities for the mentally retarded.

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APPENDIX

SECTION A. TESTS OF PHYSICAL FITNESS

1. 300 METER RUN

The test measures anaerobic and aerobic capacity.
Equipment: A 50 m distance on a track with two persons marking the ends which also are the turning points. An assistant runs with and motivates the subject.
Position: The subject starts from a standing position behind the starting line.
Instructions: Run to the person over there, around him and back again as fast as you can. Repeat this run three times without stopping.
Measurement of performance: The 300 m run is performed once and the time recorded to the nearest second.

2. SIT UP

The test measures the dynamic strength of the abdominal muscles.
Position: The subject lies on his back on a 2 cm thick superlon-plate, knees bent at an angle of 90° and hands resting on the abdomen with fingers interlocked. An assistant gives support at the ankles.
Instructions: Sit up straight and lie down again. Be sure that your head touches the floor. Repeat smoothly and without stopping as many times as you can. During the performance you must not support yourself with your elbows.
Measurement of performance: The numbers of sit-ups are counted up to 30.

3. 25 METER RUN

The test measures running speed.
Equipment: 25 m track.
Position: The subject starts from a standing position, leaning forward with the front foot behind the starting line.
Instructions: Run as fast as you can to the person standing over there (the person is standing 10 m after the 25 m mark).
Measurement of performance: The 25 m run is measured to within 0.1 sec. The subject is allowed to run twice and the better result is recorded. An assistant accompanies and motivates the subject.

4. FORWARD FLEXION OF TRUNK

The test measures the isometric muscle strength of the abdominal muscles.
Equipment: A strain-gauge transducer connected to a recorder, and two wooden plates connected by hinges and fixed on a stationary base. One plate is horizontal and the other is raised at an angle of 30° to the horizontal one. Two straps, the position of which can be adjusted, are connected to the plates. - Total error of the equipment can be approximated from full scale (100 kp) A = 0.75% + 2 x 0.5% = 1.75%.

Position: The subject is in a half-sitting position with the pelvis held where the plates join. The other strap connected to the strain-gauge transducer at the back of the subject is tightened around the chest of the subject. The subject's knees are bent at an angle of 90° and his feet are on the plate. An assistant supports his ankles and knees. His hands rest on the abdomen with fingers interlocked.
Instructions: Bend forwards against the strap as smoothly and strongly as you can until you are told to relax.
Measurement of performance: The performance is repeated three times at intervals of 15 sec. The subjects are told to relax between performances. The performances are registered in kiloponds and the best performance is recorded.

5. BACKWARD EXTENSION OF TRUNK

The test measures the isometric muscle strength of the back muscles.
Equipment: The same as in measuring forward flexion of trunk. One plate is in a horizontal one.
Position: The subject lies prone with the pelvis at the joint of the plates and with the upper part of the body bent downward. One of the straps holds the chest at the height of the axilla and the other at the height of the spina iliaca. An assistant supports the ankles.
Instructions: Bend the upper part of your body backwards against the strap as smoothly and strongly as you can until you are told to relax.
Measurement of performance: The same as in measuring the forward flexion of the trunk.

6. LEG EXTENSION (both legs)

The test measures the isometric muscle strength of the leg extensors.
Equipment: A dynamometer measuring the extension force of the legs.
Position: The subject is in a half-sitting position, knees bent at an angle of 90° and feet placed on a foot plate.
Instructions: You are to extend your legs as strongly as you can against the load.
Measurement of performance: The maximal load which the subject can make move is recorded in kiloponds.

7. ELBOW FLEXION

The test measures the isometric muscle strength of the elbow flexors.
Equipment: The same as in measuring forward flexion of trunk. The plates are in a horizontal position.
Position: The subject is sitting erect holding the strap connected to the transducer. The elbow is flexed at an angle of 90° with the forearm on the plate in the middle position.
Instructions: Bend your arm as smoothly and strongly as you can until you are told to relax.
Measurement of performance: The same as in measuring the forward flexion of the trunk.

SECTION B. TESTS OF PSYCHOMOTOR PERFORMANCE

1. HOPPING ON ONE LEG

The test measures the ability to reach and maintain balance in hopping.
Instructions: Hop forward on one leg until you are told to stop.
Measurement of performance:

3 points: at least 3 correct hops
2 points: 1-2 correct hops
1 point: hop once, but loses balance
0 point: unable to hop

2. WALKING ON BALANCE BOARDS

The test measures dynamic balance.
Equipment: 3 balance boards, 2.75 m long, 5 cm high and 6 cm, 4.5 cm and 3 cm wide.
Instructions: Walk on each board from one end to the other without touching the floor except when turning at the end of the board. If you fail you can start from the beginning again. You have four trials on each board.
Measurement of performance: The number of steps taken on the board is counted. The total score is calculated on the bases of the three best performances on each board. The maximum score for each performance is 8, which can be achieved either by walking on the board from end to end without mistakes or by taking 8 steps on the board (Eggert & Kiphard 1972).

3. STANDING ON ONE FOOT

The test measures static balance.
Instruction: Place your hands on your hips, lift one leg, and place your foot inside the knee of your other leg. Keep this position as long as you can.
Measurement of performance: Standing time is recorded from when the subject reaches the correct standing position to when the subject loses balance.

4. CARRYING BOXES

The test measures gross co-ordination in lifting and carrying.
Equipment: 10 cardboard boxes (22 cm x 31 cm x 23 cm) weighing 1 kg each.
Position: There are two marked lines at a distance of 4 m. The boxes are lined up behind one of the lines and are to be carried and lined up behind the other. The subject is to start from one end of the row.
Instructions: Take hold of the boxes one by one with both hands and carry them to the other side and place them in a row behind the line. Do it as fast as you can but do not run.
Measurement of performance: Total performance time is recorded in seconds. The better one of the two trials is recorded.

5. PILING BOXES

The test measures gross co-ordination in lifting, transferring and piling.
Equipment: 5 cardboard boxes (22 cm x 31 cm x 23 cm), weighing 1 kg each.
Position: The piled boxes are placed in front of the subject obliquely to the left and are to be tranferred and piled 1 m obliquely to the right.
Instructions: Take hold of the boxes one by one with both hands and pile them onto the marked place on the other side. Do it as fast as possible.
Measurement of performance: The total time of performance is registered to within 0.1 sec.

6. THROWING A BALL

The test measures the co-ordination of hand and eye and exactness in throwing a ball.
Equipment: 10 tennisballs and a basket (height 52 cm, diameter 37 cm).
Position: The subject stands behind a line 2 m away from the basket.
Instructions: Throw the balls one by one with your better hand into the basket. Concentrate on each performance.
Measurement of performance: The test is performed once and each successful throw gives one point.

7. MOVING LARGE BEADS OVER

The test measures the ability to grip a small object, to move it from one place to another and to release it, with only the index finger and the thumb of one hand.
Equipment: Two round plastic bowls (diameter 14 cm) placed at a distance of 5 cm from one another side by side, and 10 wooden beads with a diameter of 13 mm. For right-handed persons the beads are in the left-hand bowl at commencement, for left-handed persons in the right-hand bowl.
Instructions: One of the plastic bowls in front of you contains 10 beads and the other bowl is empty. Your task is to put the beads one by one into the other bowl as fast as you can.

8. MOVING SMALL BEADS OVER

The test is similar to the test"Moving large beads over". The beads have a diameter of 7 mm.

9. THREADING A PENCIL

This test measures the co-ordination of the hands and the ability to thread with one hand and receive with the other.
Equipment: A wooden cylinder mounted vertically on a stand (the diameter of the cylinder 5.7 cm with a hole of approximately 8 mm diameter drilled horizontally through the cylinder, 10 unsharpened pencils and two shallow cardboard boxes for the pencils (one box on each side of the cylinder). At commencement, the pencils are in the box on the side of the dominant hand.
Instructions: In front of you there is a wooden cylinder with a hole in it. On one side of the cylinder there is a box with 10 pencils while the box on the other side is empty. You are to take one pencil at a time, thread it through the hole in the cylinder and put it in the other cardboard box as quickly as you can.

10 PUTTING THE CAP ON BALL-POINT PENS

This test measures the co-operation of the hands, the ability to grip and attach objects with both hands.
Equipment: The ball-point pens and the caps belonging to them and two shallow cardboard boxes.
Instructions: In front of you there are 10 ball-point pens and two cardboard boxes. One of them contains the caps belonging to the pens. You are to take one pen in one hand and one cap in the other, put the cap on the pen and then put the pen in the other cardboard box. Perform the task as quickly as possible. Repeat until all pens have caps and are in the box.

11. PLACING CARDS ON A SPIKE

This test measures exactness in directing,
Equipment: A paper spike and 10 cards with a hole in them. The cards are fanned out behind the spike.
Instructions: In front of you there is a paper spike and 10 cards. Your task is to take one card at a time and drop it onto the spike by putting the spike through the hole. Do not lift the spike from the table. Perform the task as quickly as possible and repeat until all cards are on the spike.

12. TWISTING A BOTTLE CAP

The test measures the ability to perform a different operation with each hand simultaneously: holding and twisting.
Equipment: 10 small plastic bottles wit caps, two shallow boxes and a cardboard box. The bottles are placed on the table in one of the boxes and the caps in the other on the side of the dominant hand. The cardboard box is placed on a chair, also on the side of the dominant hand.
Instructions: In front of you there are 10 bottles and 10 caps. I want you to take one bottle and one cap at a time and twist on the cap until it is tight. Then drop the bottle in the box on the chair beside you. Perform the task as quickly as you can and repeat until all the boxes are in the box.

13. ATTACHING CLOTHES-PINS

This test measures the ability of the thumb and the index finger of one hand to squeeze, direct and release an object.
Equipment:10 clothes-pins and a string tightly stretched. The string is at eye level, the clothes-pins side by side in front of the string on the table.
Instructions: You have 10 clothes-pins in front of you. Your task is to pin them onto the string one by one as fast as you can.

14. MOVING THUMB-TACKS WITH TWEEZERS

This test measures exactness in picking up an object with one hand using a tool.
Equipment: 20 thumb-tacks, tweezers, a box. The thumb-tacks are placed on the table in a group with the points upwards beside the box on the side of the dominant hand.
Instructions: You have 20 thumb-tacks in front of you and a box beside them. You are to pick up one thumb-tack at a time using the tweezers in your hand and drop it into the box.

15. REACTION TIME

The test measures the simple reaction time of the finger to a visual stimulus.
Equipment: A reaction-time apparatus with a stimulus lamp and a pushbutton which puts out the light when pressed.
Instructions: In front of you there is a pushbutton to be pressed using your finger. Put your index finger in front of the pushbutton. I want you to press the pushbuttons as quickly as possible when the light comes on.

Pauli Vuolle

INFLUENCE OF MASS MEDIA
ON PEOPLE'S SPORT BEHAVIOR IN FINLAND

VII International Seminar "Sport and Leisure",
Warsaw, 11-15.9.1977

1. INTRODUCTION

Competitive sports occupies a fairly prominent position in Finnish mass media and during major sports meetings, such as the Olympic Games, it tends to have a dominating position. Surveys of readers, listeners and viewers show that the popularity of sports as a form of entertainment is high in Finland and is on the increase along with development of the TV-techique (1, 2, 3, 4, 5). Popularity is also seen from the wealth of supply, which in the commercial press is manifested as the growing sports section of daily newspapers and weeklies. Another important feature is that mass media increasingly focus on reporting on high-interest international and national sports events. Small-circulation local newspapers, which helped to support the identity and thus also sports culture of local communities, are retreating. Their place is being taken by large newspapers with a nation-wide circulation, which are not interested in the preservation of local sports culture but give priority to sports meetings with a high news value (6). One of the reasons of this trend of monopolization (7) is competition between newspapers, but also deep changes in social structure, of which the most obvious is extensive flight from the countryside, have contributed to the trend.

Behind all this is, however, the dominance of international entertainment in our mass media, which constitutes a great threat to the preservation of our national culture. The share of western commercial entertainment industry is dominant in our mass media (8). The public radio and television which are subject to the control and direction of the Parliament are no exception in this respect. In principle, they are in a position to carry out a programmes policy which would help maintain and vitalize national sports culture. The international value system of sports and its manifestations are at present more familiar to the Finnish readers, listeners and viewers than the characteristics and events of our national sport culture.

In Finland physical education and sport culture is carried out and maintained by the school system and the independent sport associations with their networks. The latter are responsible, among other things, for participations in international competitions. Physical education is a compulsory subject in the comprehensive school and in academic as well as vocational secondary schools whereas it is voluntary in institutions of higher education.

It is mainly the task of the school to produce the cognitive and psychomotor abilities, on which the physical activity interests of the whole population after school are built. The school system as a source of knowledge on sports is being challenged by the sports reporting of mass media, which is a significant but largely unchartered factor in this respect. In taking a stand to it the physical education teacher has to judge to what extent its content supports the attainment of the goals of physical education. Does the sports entertainment of the press, radio or tv, which stresses the value system of top athletics and international competitive sports, support the work on physical education and culture by schools and sports associations so that it helps to maintain motivation necessary for a permanent active interest in physical activity. Or is it rather the case that the sports entertainment of mass media ties us to the passive recipient role and estranges us from active sports interests and socializes us into immobile spectators at home.

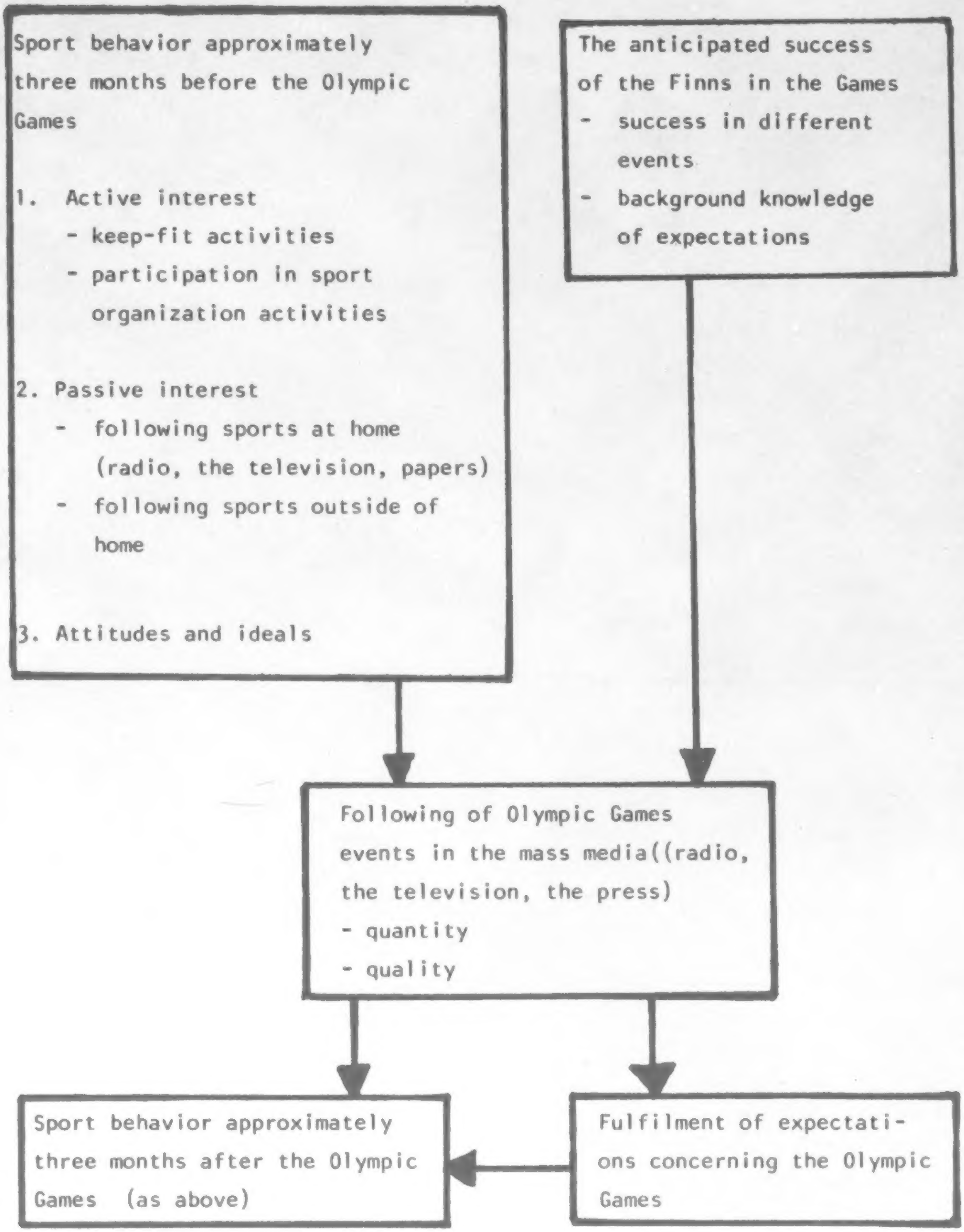
Our knowledge of the effects of the mass media coverage of sports is scarce. It has often been maintained that sports meetings covered by mass media activate interest in personal physical activity. Top athletics, in particular, has been considered to offer examples which make young people take an interest in sports with a wish to some time equal the achievements of the sports hero chosen as an object of identification. In adults the transfer effect is more difficult to explain. A challenging example is believed to trigger off active personal interest, which assumption is based on the positive and highly pleasant emotional experiences mediated by sports entertainment.

The influence of examples and sports idols on the physical activity interests of young people is indisputable. Studies have shown that most of boys under the age of ten hope to become top athletes (10). The power of example lasts, however, so long as the young person identifies with the idol and believes in his chances to become like him. As a result of physical and cognitive development an individual's self-image becomes crystallized and at the same time also views on personal abilities. When at this stage of self-scrutiny and self-appraisal the individual learns to see the limits of his own performance, the effects of examples provided by mass media disappear and the motivation on which childhood sports activity has been built is broken. If the sports reporting of mass media does not at this stage offer the maturing young person rational grounds for keeping up personal interest in physical activity, it is likely that the young person on the threshold of adulthood will become a passive viewer and listener of sports entertainment.

2. A STUDY OF THE EFFECT OF THE OLYMPIC GAMES IN MONTREAL ON THE SPORTS BEHAVIOR OF THE GENERAL PUBLIC

The influence of the sports coverage of mass media was assessed by studies which attempted to find out the effects of the Montreal games on the sports behavior of Finnish adults and school pupils three months after the games.

Research plan:


Sport behavior approximately three months before the Olympic Games
1. Active interest
- keep-fit activities
- participation in sport organization activities
2. Passive interest
- following sports at home (radio, the television, papers)
- following sports outside of home
3. Attitudes and ideals
The anticipated success of the Finns in the Games
- success in different events
- background knowledge of expectations
Following of Olympic Games events in the mass media((radio, the television, the press)
- quantity
- quality
Sport behavior approximately three months after the Olympic Games (as above)
Fulfilment of expectations concerning the Olympic Games

In spring 1976, about three months before the Montreal games people's physical activities and their orientation were measured with a questionnaire as well as how actively they followed the sports coverage of the press, radio and television. Furthermore, the expectations concerning the success of Finnish athletes in Montreal were ganged.

In the autumn, about three months after the games the measurement of sports interest and activity in following sports news was repeated. At the same time it was asked how closely they followed the games in mass media and how well their expectations were fulfilled.
(See next page).

In the comparison the replies of 268 women and 100 men represented adult population. They were a random sample of the employees of the town of Jyväskylä. Of the school sample 149 were comprehensive school pupils and 214 upper secondary school boys. The sampling unit was the class.

Adults and school-children had been further divided into the following sub-divisions:

Adults:

1. men/women
2. higher professional/ lower professional/workers
3. 17-35 age group, 36-63 age group

School-children (boys):

1. upper forms of the comprehensive school, sixth form
2. father's occupation: higher professional/lower professional/ workers

The first analyses give rise to the following conclusions:

1. Expectations concerning the success of Finns in the Montreal Games: One half of the adult population and 66 % of the school-boys estimated that Finns would be more successful in Montreal than they had been in Münich, while the rest expected them to be less successful. The workers among the adult population and the boys in the higher forms of comprehensive school had higher hopes for success than higher professional adults and sixth form pupils. The highest hopes for medals were pinned on long-distance running, on those events, in which Viren brought the gold medals to Finland.

A quarter of the adult population based their estimate on pure guesswork, while the others for their information mainly from the media. The men guessed much more seldom than the women.

2. Following of the events of the Games in the media

The events of the Games were followed in the media quite closely. Over 40 % of the adult population and nearly 60 % of the schoolboys saw on the television or heard on the radio almost all the programmes or followed them at every opportunity (table 1). The women were less interested than the men. Professional status or age, on the other hand, did not affect the activeness in viewing. The games were followed less from the press than from radio or television. This medium did, however, also reach the majority of people interviewed.

TABLE 1. Following of the events of the Games on radio or television

	ADULT POPULATION			SCHOOLBOYS		
	women %	men %	in all %	higher forms %	sixth form %	in all %
Hardly at all or intermittently	47	23	39	16	27	22
All the programmes on favourite event	13	25	17	15	24	20
Nearly all the programmes or at every opportunity	40	52	44	69	49	58
In all	100	100	100	100	100	100
n	165	77	242	129	170	299

3. Fulfilment of expectations of success

The Finnish sportsmen well fulfilled the hopes for their success. About 60 % considered the sportsmen to have succeeded better than anticipated. The professional people among the adult population and the sixth formers among schoolboys who had had lower initial expectations felt their expectations to be fulfilled more than the workers and the boys in the higher forms of comprehensive school, who had had higher expectations.

4. Sport behavior before and after the Games

If the Olympic Games have a motivating effect on sport behavior, this effect could have been expected to show as an increased interest in physical activity when comparing the situation before and after the Games, since the above results show that 1) the adult population and the schoolboys followed the games closely in the media, and 2) the success of the Finns at the games fulfilled their expectations.

The changes in sport behavior do not, however, confirm the hypotheses made above.

Figure 1 shows that there was a decrease in weekly physical activity (number of times) from the spring to the autumn. (At the times of measuring the possibilities for e.g. outdoor activities were about equally good.)

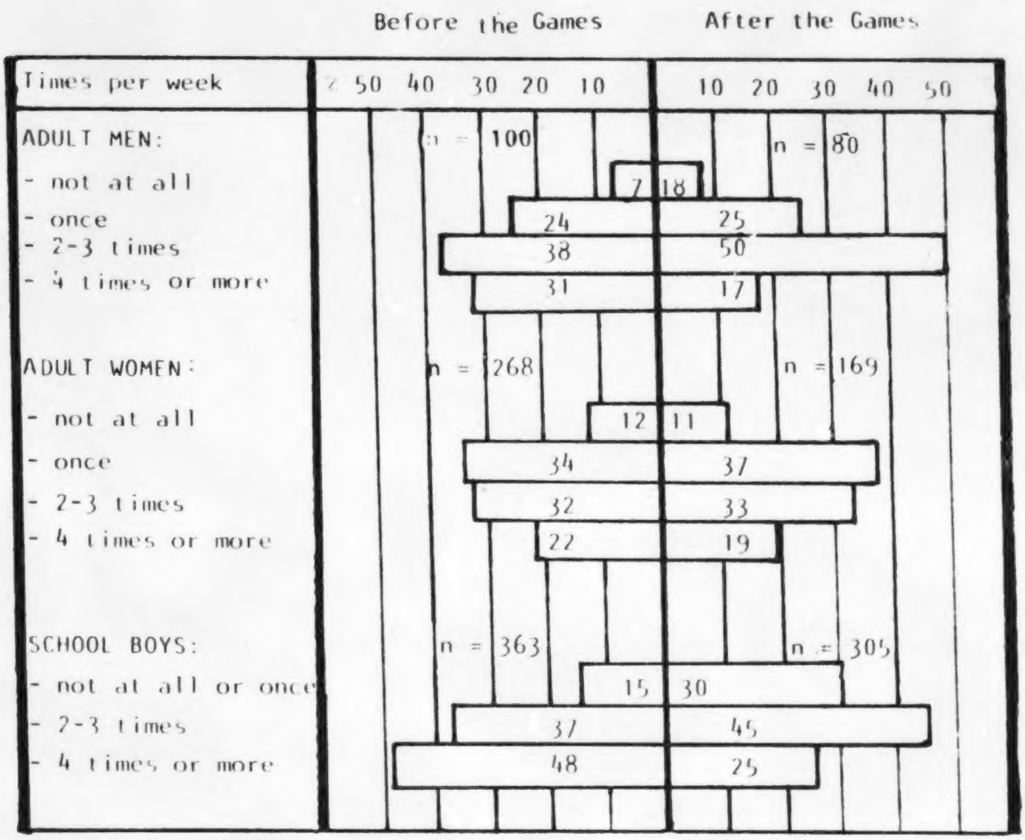


FIGURE 1. Weekly physical activity before and after the Games

The situation was similar as regards individual sports, whether measured by the number of times or the time spent at one time. Not even Lasse Viren's gold medals seemed to have increased interest in running and jogging, the interest in these physical activities also being lower in the autumn than in the spring.

The participation of the adult population in competitive events was as modest after the Games as before them (women about 1 %, men 5 %). A fifth of the schoolboys said they had competed in the spring before the Games, and the number was slightly smaller at the time of the second measuring.

The activiness in following sportsevents also clearly went down. Figure 2 shows that both the adult population and the schoolboys watched and listened to fewer sports programmes after the Games than before them (in proportion to the amount available).

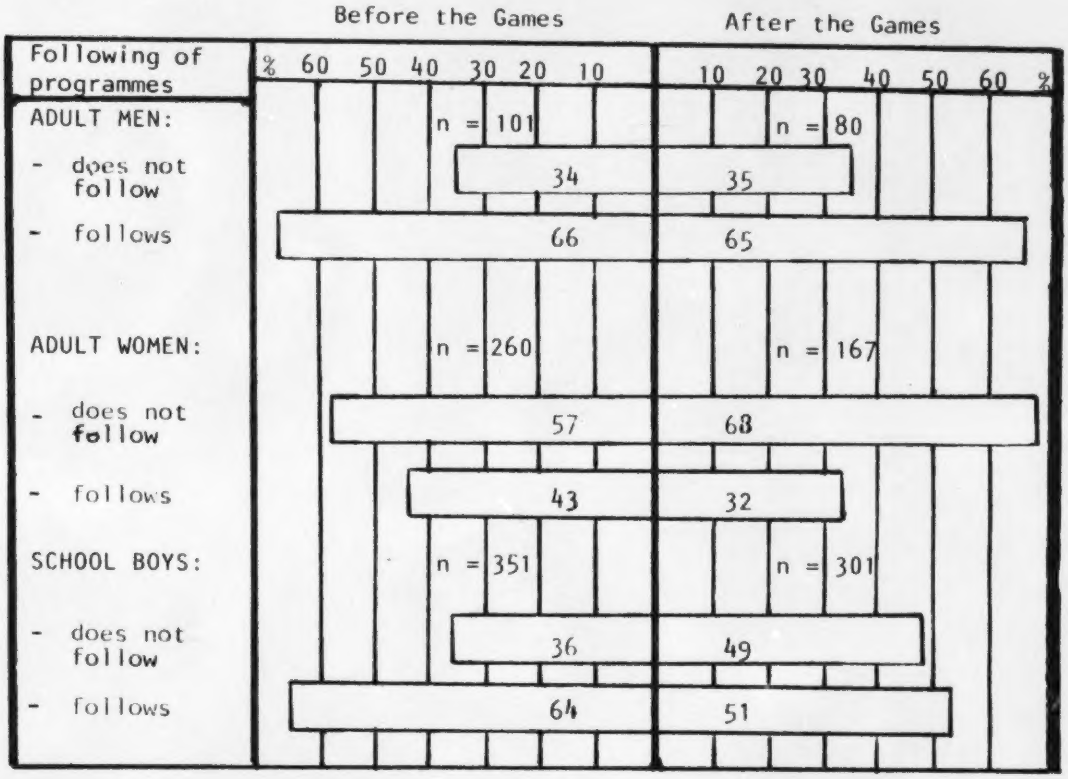


FIGURE 2. Following of sport proagrammes on radio or the TV before and after the Games

Active following of competitions events in the press as well as following sport at the place of competition diminished in a corresponding way.

In all the cases described above the active and passive interest in sport diminished in general in the occupational and age groups, as well as in the comprehensive school and the sixth form.

5 % more of the adult population esteemed top athletics highly after the games than had done before. On the other hand, the number of those giving it low esteem was also a few percent higher at the time of the second measuring (table 2).

TABLE 2. Esteem of top athletics

ESTEEM	BEFORE THE GAMES Adult population men %	 women %	AFTER THE GAMES Adult population men %	 women %
high	49	42	53	47
moderate	42	39	33	32
low	9	19	14	21
In all	100	100	100	100
n	101	272	79	168

There was no change as regards the suitability of sportmen as for young people. It is, however, interesting to note, that the women clearly more frequently than men considered a sportsman to be a very suitable example.

The position of a sportman as a favourite person of schoolchildren was not affected by the Games.

Before the games three-fourths of the comprehensive school pupils and about one third of upper secondary school boys regarded an athlete as their favourite person whom they wished to be like when they became adults themselves. After the games the popularity of athletes had declined a few percentage points while the situation remained unchanged among the upper secondary school boys.

The falling off of active sport pursuits at the time of the second measurement seems to indicate that the season has had a decisive effect on sports interest of the population. Although conditions during the spring and autumn measurements were good and made it possible to carry out physical exercise out-of-doors, spring is the time of the year when the motivation of the Finnish people for physical activity increases and the activity clearly falls off when autumn approaches. The results is in accord with those observations which Telama made when he previously researched the factors which affect the interest in physical activity of school children (9). In Finland where the weather conditions strongly change from summer to winter motivation but also the possibilities for physical activity clearly follow these changes.

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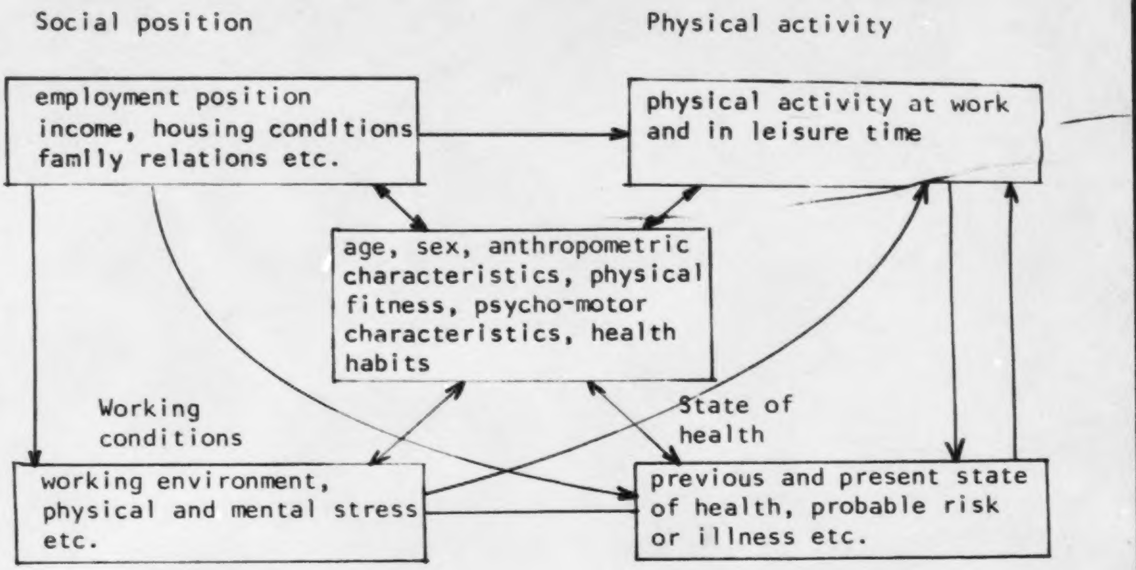
4. METELI-PROJECT. Working conditions, state of health and physical activity of workers in the machine industry

The accelerating technical development and the competition within the industry striving for maximum efficiencies add, both quantitatively and qualitatively, the physical and mental stress of employees working in production. The mechanizing of work methods and the profound change in the nature of work have great socioeconomic consequences and they are important determinants of employees' comfort and health. The changes in society as well as in the characteristics of industrial production seem to be reflected in the records of public health. It has also been thought that decreasing physical activity plays an important role in the etiology of e.g. cardiovascular diseases as well as in diseases of the locomotor system.

The purpose of the research was first to compile a broad picture of the sample population in terms of living and working conditions, state of health and physical activity. Secondly, the qualitative and quantitative differences in the state of health was analyzed and associations between the state of health and living and working conditions were mapped out. Particular attention was paid to physical and mental stress and to the physical working environment. Connections between the following factors were the starting assumptions for the research.



Social position
Physical activity
employment position
income, housing conditions
family relations etc.
physical activity at work
and in leisure time
age, sex, anthropometric
characteristics, physical
fitness, psycho-motor
characteristics, health
habits
Working
conditions
State of
health
working environment,
physical and mental stress
etc.
previous and present state
of health, probable risk
or illness etc.

The study is being carried out by an interdisciplinary group in three plants of the same government-owned company in Jyväskylä, Finland. The plan for data collection was as follows: 1) Of a stratified sample of 1500 employees over 82 % returned a 40-page anonymous questionnaire adequately filled. This provided basic background information on e.g. socioeconomic state, working conditions, health, physical activity etc. of the population as reported by themselves. 2) A 4-page questionnaire with identifiable respondents to all of the 4600 employees yielded personal data and estimates of physical activity during work and at other hours. 3) Based on this information, 900 people were selected by a stratified sampling each of which were studied in a 3.5-hour examination including anthropometric, physiological, biochemical psychological and psychomotor measurements and tests, a medical examination and an interview of physical activity. 4) Working conditions were mapped out with statistically optimized samplings by instrumental measurements of environmental and physiological variables, and by structured environmental and ergonomic observations and interviews. 5) Background data about production, its organization and administration, on accident rates, social services etc. were obtained from factory archieves and by interviews.

The living and working conditions, states of health and diseases, and physical activity patterns and variations in the distributions of these features in different social and professional subgroups have been described. Second, the quantitative and classifiable data for significant interrelations between variables and indices representing the areas of main interest were analyzed. Third, it was attempted to interpret the confirmed interrelationships as possible representatives of explanatory associations, and to evaluate their strength and predictive value, especially with respect to preformulated main hypotheses such as those concerning the probable relations between working conditions and/or physical activity on one hand and state of health on the other. All of the data collected by a variety of different methods will be combined into a synthetic overview of the situation studied. The follow-up study concerning all main variables will be implemented in 1978, in a sample of about 500 subjects.

Risto Telama

THE RELATIONSHIP BETWEEN LEISURE TIME PHYSICAL ACTIVITY PHYSICAL FITNESS AND HEALTH AMONG EMPLOYEES OF MACHINE INDUSTRY IN FINLAND

IV International Congress of ISSP,
3-9.10.1977

1. FOREWORD

This study is part of a large METELI-project the purpose of which is to study the working conditions, state of health and physical activity of employees in the machine industry and their relationships with some individual factors. The purpose of this study is to investigate the importance of physically active leisure time and physical fitness as regards some factors related to mental health. The study is mainly concerned with slight symptoms of mental disorder such as psychosomatic symptoms. Psychic wellbeing is perhaps a better term in this context than mental health. The before-mentioned relations are studied in connection with stress in work. The social starting point of this study is the fact that mental disorders are common in Finland in comparison with other nations. 40 per cent of hospital beds in our country are reserved to psychiatric patients and almost 30 per cent of our early retirement pensions have been granted for reasons of mental health (Väisänen 1975, Toropainen 1974). Difficulties in work are often the most important factor causing illness especially in psychosomatic diseases. This topic is scientifically interesting because the relation of physical activity and mental health has been widely discussed and written about, but empirical research results are scarce.

2. THE THEORETICAL BACKGROUND OF THE STUDY

In connection with the METELI-project attempts have been made to analyze the concept of mental health, which is interpreted in various ways in literature. Here it is possible only to say that mental health in this study is considered a multidimensional phenomenon, which can following Kornhauser (1965) be defined as man's balanced relation with himself and his environment. In case this relation is disturbed on any level of human experience, e.g. physical, psychic or social level, the disturbance causes a state of mind which can be called stress. Stress on the other hand may cause such changes in the body or in behaviour as anxiety, alienation, tension or psychosomatic symptoms, which can be considered disorders in one's psychic wellbeing. From the point of view of preserving mental health the factors which cause stress and those affecting stress tolerance are essential. The importance of physical activeness and fitness can also be studied from these points of view.

As working conditions have been found to be a central factor causing stress (Bolinder & Ohlström 1971; Levi 1974) and working conditions are also related to mental disorders (Kornhauser 1965; Suonio & Sorri 1976; Levi 1974) and because the nature of work is known to regulate leisure time as well (for instance METELI 1975; Parker 1971; Snyder & Spreitzer 1974) this study concentrates on stress brought about by working conditions. Also the relationship of physical activeness, fitness and mental health are looked into in relation to stress caused by work.

Figure 1 shows a theoretical model of stress. Stress experienced by an individual as well as the consequences of stress depend primarily on the interaction of the following three factors: 1) the nature of environmental factors requiring adjustment, i.e. environmental stress

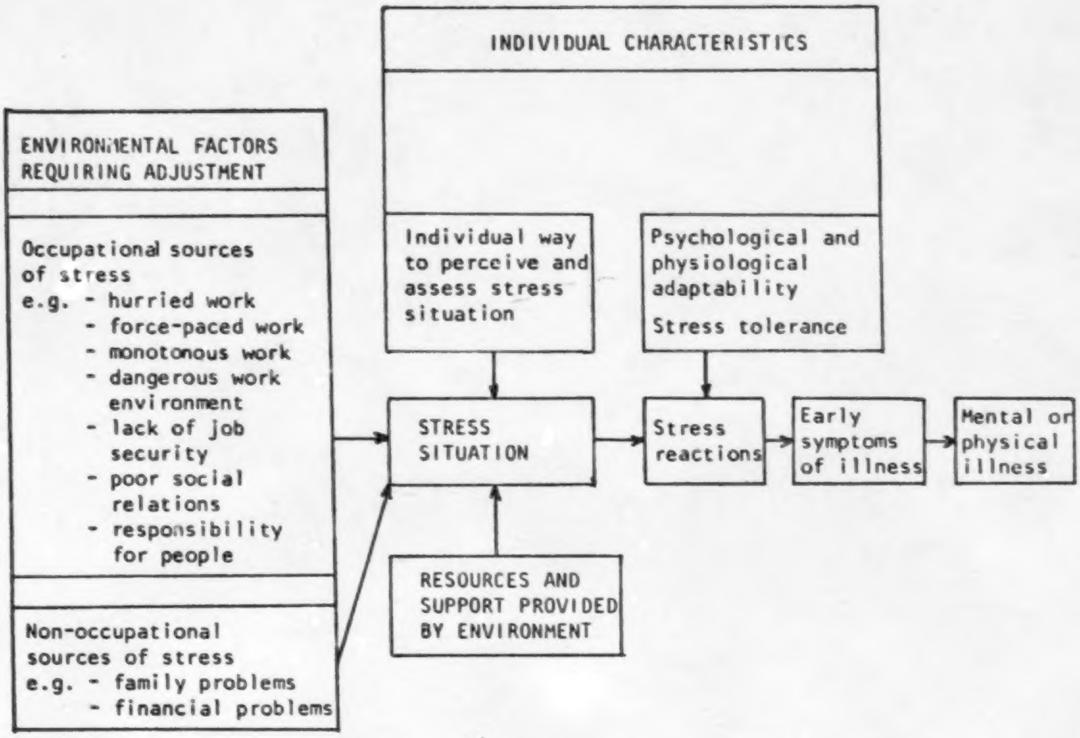

INDIVIDUAL CHARACTERISTICS
ENVIRONMENTAL FACTORS REQUIRING ADJUSTMENT
Occupational sources of stress
e.g. - hurried work
- force-paced work
- monotonous work
- dangerous work environment
- lack of job security
- poor social relations
- responsibility for people
Non-occupational sources of stress
e.g. - family problems
- financial problems
Individual way to perceive and assess stress situation
Psychological and physiological adaptability
Stress tolerance
STRESS SITUATION
Stress reactions
Early symptoms of illness
Mental or physical illness
RESOURCES AND SUPPORT PROVIDED BY ENVIRONMENT

FIGURE 1. Theoretical model of stress.

factors, 2) individual characteristics and 3) resources and support provided by environment to the individual. The importance of physical activeness and fitness from the point of view of stress is related to individual qualities. First of all physically active leisure time may influence the way in which the individual perceives and assesses a stress situation or how he tolerates stress psychically. Secondly, physical fitness is important with regard to the biological adaptation syndrome of stress, which Selye (1956) has described. Physical fitness may have an effect on how stress reactions develop and whether e.g. psychosomatic symptoms emerge. These symptoms are here considered indicators of disturbances of psychic wellbeing.

There is only a little empirical knowledge of the effects of physical activeness on stress toleration and stress reactions on the psychological level. It is widely believed that physical activeness decreases anxiety, e.g. Rarick (1967) found out that 98 per cent of medical doctors believed so. However, there is scarce empirical evidence. There are some data which suggest that bowling has positive effects (Byrd 1967) but negative results have been obtained as well (Ryan & Allman 1974). Because spontaneous self-expression and expression of emotions have been considered important with regard to mental health, the importance of physical activeness has been judged significant also from the point of view of self-expression (Vanderzwaag 1972) and expression of emotions (McCloy Layman 1974). The relationship of physical activeness and personality traits have been widely studied. Results suggest that those active in sports have such personality traits which may be important from the point of view of stress tolerance and mental health (among others Cooper 1969; Kane 1964). As Martens (1975) has observed, it is not possible to draw any definite conclusions regarding the impact of sport interests owing to the methodological weaknesses of most studies.

The significance of physical fitness for stress tolerance can according to Selye (1956) be understood so that physical activeness which increases fitness may be seen as a stressor to which a healthy organism responds by adaptation, in other words by improved fitness, which again increases the possibilities of tolerating the harmful phase of other stressors. Studies among psychiatric patients have shown that disorders of physical fitness (Ryan & Allman 1974) and motorics (Morgan 1970) are related to the amount of psychopathological disorders. On the other hand, there is little information about the relationship between fitness and mental health in persons who are not psychiatrically ill (McCloy Layman 1974).

The problems of the study are the following:

1. To what extent physical activity during leisure time is related to some indicators of mental health disorders and especially to psychosomatic symptoms including anxiety, sleep disorders, loss of appetite, headache, etc.
2. To what extent physical fitness and particularly muscle fitness is related to disorders of mental health and to psychosomatic symptoms in particular.

3. RESEARCH METHODS

Using a stratified systematic sampling at regular intervals a sample consisting of 609 men and 293 women was selected from a population which comprised about 5000 employees in three metal factories. Physical activity outside of work was measured in two stages by means of a combination of short questionnaire and interview according to the Montoye and Reiff procedure (Montoye & Epstein 1965; Reiff et al. 1967).

Physical fitness was measured in terms of the capacity of the respiratory system (forced vital capacity) and the maximal oxygen intake on a bicycle ergometric test. Muscle strength was measured with functional tests and tensiometer.

The variables of mental health were indexed by a questionnaire asking about psychosomatic symptoms, which were checked in individual medical examination. In addition to this, a questionnaire dealing with psychic wellbeing and psychic stress was administered as a group test. The questionnaire contained items which had been tried out in earlier investigations (e.g. Bolinder & Ohlström 1971; Gardell & Westlander 1968; Kalimo et al. 1970; Kornhauser 1965; Scharman 1967).

4.RESULTS

A general analysis of relationships based on correlations showed that leisure time physical activity and physical fitness are to some extent related to variables of mental health, but correlations are low. Physical fitness is more closely related to psychic wellbeing than is physical activity. Working conditions are more important for psychic wellbeing than is physical activity.

In the interview of physical activity people were asked how much time they spent on sport interests, home chores and journey to work and what was the intensity of their participation. As far as concerns activity the results were interesting mainly insofar as in men's activity in general, home chores including, were slightly positively

TABLE 1. Relationship between physical fitness and psychosomatic symptoms. The intercorrelations of variables and the first and second order partial correlations.

MEN

1	Occupational status	1													
2	Age	-10	2												
263	Sleep disarders	07	17	263											
266	Sexual indifference	-	30	22	266										
267	Dizziness	15	17	26	30	267									
268	Palpitations	05	15	24	20	34	268								
271	Breathing difficulties	17	16	23	32	42	23	271							
273	Tiredness	23	07	39	31	42	33	33	273						
276	Sum of psychosomatic symptoms	20	09	55	45	59	50	45	72	276					
831	Feelings of exhaustion	23	07	22	16	25	25	23	43	44	831				
2101	Anxiety	14	01	69	36	44	38	35	76	87	42	2101			
2102	Neuroveget. symptoms	14	24	37	61	69	60	62	56	80	35	61	2102		
2104	Depressions	24	-	41	33	45	33	33	78	85	44	81	58	2104	
2105	Main psychosomatic symptoms	16	12	64	41	62	53	51	75	92	44	94	81	79	2105
666	Capacity of respiratory system	-10	-62	-19	-26	-21	-14	-24	-17	-17	-14	-12	-28	-10	-19
5000	Strength of extremities	-	-44	-12	-21	-26	-18	-24	-22	-18	-19	-14	-28	-15	-21
5001	Strength of body	-14	-55	-20	-29	-32	-27	-27	-29	-27	-23	-22	-38	-20	-30
	First order partial correlations, occupational status controlled														
666	Lung function		-18	-26	-20	-14	-23	-15	-16	-12	-07	-10	-27	-08	-17
5000	Strength of extremities	-45	-12	-21	-26	-18	-24	-23	-19	-19	-16	-14	-29	-16	-21
5001	Strength of body	-58	-19	-29	-30	-26	-25	-26	-25	-21	-20	-20	-37	-17	-28
	Second order partial correlations, occupational status and age controlled														
666	Lung function		-09	-10	-11	-05	-15	-12	-11	-08	-08	-14	-09	-11	-11
5000	Strength of extremities		-04	-09	-20	-13	-18	-21	-15	-17	-12	-13	-20	-17	-17
5001	Strength of body		-11	-15	-24	-22	-18	-26	-23	-19	-15	-20	-27	-20	-25

TABLE 2. Relationship between physical fitness and psychosomatic symptoms. The intercorrelations of variables and the first and second order partial correlations

WOMEN

1	Occupational status	1												
2	Age	15	2											
263	Sleep disarders	18	29	263										
267	Dizziness	12	-02	14	267									
268	Palpitations	12	19	30	27	268								
273	Tiredness	15	02	34	40	30	273							
276	Sum of psychosomatic symptoms	18	02	54	54	47	67	276						
831	Feelings of exhaustion	23	01	19	30	18	38	39	831					
855	Worry about future	27	-11	17	10	11	17	25	24	855				
2101	Anxiety	14	-01	63	36	32	72	86	35	28	2101			
2102	Neuroveget. symptoms	18	17	41	60	59	50	82	30	19	58	2102		
2104	Depressions	15	-06	38	44	28	72	83	39	24	78	55	2104	
2105	Main psychosomatic symptoms	17	06	60	53	51	70	93	38	27	93	80	77	2105
720	Oxygen intake	03	-20	-08	-13	-11	-04	-01	-06	-03	-03	-05	-04	-06
5000	Strength of extremities	-03	-20	-15	-11	-23	-23	-12	-20	-14	-10	-14	-12	-14
5001	Strength of body	-29	-38	-25	-18	-24	-21	-20	-25	-15	-14	-26	-14	-21

First order partial correlations, occupational status controlled

720	Oxygen intake		09	-14	-12	-04	-02	-07	-04	-03	-06	-05	-06	
5000	Strength of extremities	-19	-15	-11	-23	-23	-12	-20	-14	-09	-14	-12	-14	
5001	Strength of body	-36	-21	-15	-22	-18	-15	-20	-08	-10	-22	-10	-17	

Second order partial correlations, occupational status and age controlled

720	Oxygen intake		-04	-15	-08	-04	-03	08	-07	-03	-03	-07	-06	
5000	Strength of extremities		-10	-11	-20	-23	-12	-20	-18	-10	-11	-14	-13	
5001	Strength of body		-12	-18	-17	-19	-16	-22	-15	-12	-18	-14	-17	

related to variables of mental health. Active men had more contacts with other people during leisure and they were more satisfied with their lives than less active men. Among women the result on this point is reversed.

The general activity of women, for instance the amount of active hours (hours spent on physical exercise and domestic work) correlated negatively with psychic wellbeing so that active women are more dissatisfied with life, more irritable and they have more psychosomatic symptoms than less active women. Correlations are rather weak (0.12-0.17), yet significant. This is accounted for by the fact that in women's out-of-work physical activity domestic work weighs more than physical exercise (METELI 1975). The large amount of home chores done by women is an additional burden which on one side of gainful employment is a stress factor rather than a shield against stress. This is a clear reminder that in assessing the meaning of physical activity more attention has to be directed to the goals and nature of activity than to the quantity of activity.

The present study did not indicate, contrary to frequent references in literature that leisure time physical exercise is related to anxiety, depression and neuroticism.

The correlations of physical fitness with variables of mental health are slightly higher than those of physical activity. The correlations of physical fitness may be reduced by the fact that it was not possible for medical reasons to test those people whose fitness was the poorest. Furthermore, it has to be borne in mind that the relationships are not linear.

Physical fitness and partly also variables of mental health correlated with age and occupational status. The tables also show first and second order partial correlations, in which age and occupational status are controlled.

Of the fitness variables muscle strength and particularly the strength of body muscles are most closely related to psychosomatic symptoms (figure 2). Physical fitness correlates highest, especially among men

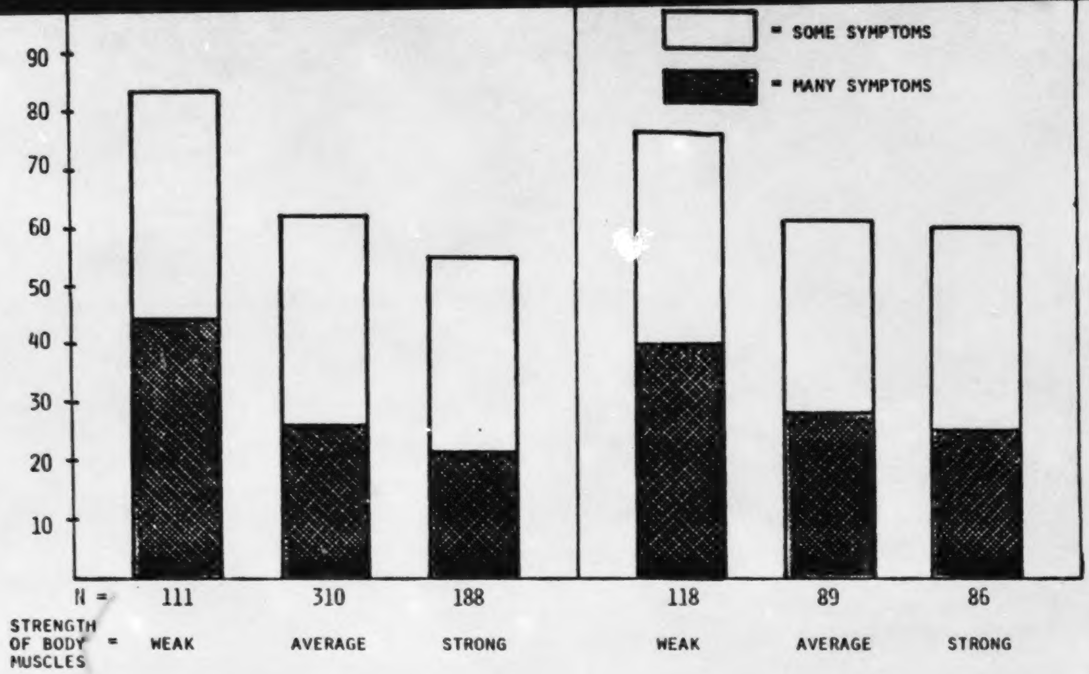


FIGURE 2. Neurovegetative symptoms by sex and strength of body muscles

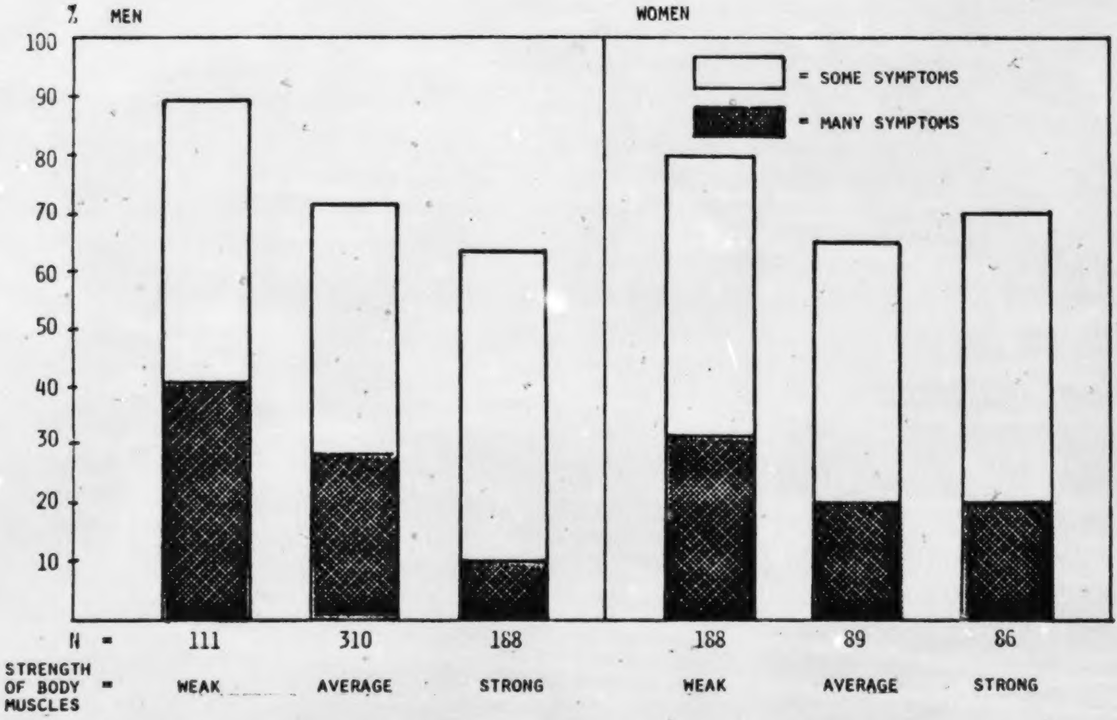


FIGURE 3. Psychosomatic symptoms by sex and strength of body muscles

(figure 3) with neurovegetative symptoms such as sexual indifference and dizziness. The first order correlations indicate that the correlations between physical fitness and psychosomatic symptoms are independent of occupational status. On the other hand, second-order correlations show that in men the correlations between the capacity of the respiratory system and neurovegetative symptoms is explained by age. Similarly age accounts for part of the correlations of sleep disorders and sexual indifference to muscle strength.

5. DISCUSSION

By way of summary of the results of the study it can be concluded that

1. Leisure time physical activity is only slightly positively related to variables of mental health. A general view according to which physical exercise reduce anxiety did not get support.
2. The quality of physical activity is important for mental health. In women activeness in domestic work is slightly negatively related to mental health and appears to be a factor which causes or increases stress.
3. Physical fitness and especially muscle strength is clearly related to mental health so that the fit ones have fewer psychosomatic symptoms and particularly fewer neurovegetative symptoms. This would indicate that physical fitness is conductive to mental health.

The results concerning the differential relationship of domestic work and physical exercise to mental health underline the significance of the level of consciousness in connection with physical activity. For the same reason it can be assumed that if the nature of physical interest had been analyzed more closely, higher correlations might have been found between it and mental health. In this study only the amount and frequency as well as intensity of physical activity was measured. In the first stage of the project an extensive questionnaire was presented to 1154 persons asking, among other things, about psychosomatic symptoms and active participation in different forms of leisure time physical activities. No clear relationships were found here between physical interests and variables of mental health, either. It would appear that physical activity as such does not affect mental health but only through fitness.

As noted in connection with the theoretical model of stress (figure 1), individual characteristics such as physical fitness affect stress mechanism at least in two ways. First, fitness may be related to how the stress situation is perceived and assessed. This in turn may be related to self-image and particularly to body-image, and especially among men. Fitness may heighten self-confidence, which is considered as one of the cornerstones of mental health. Secondly, fitness may have an impact on the adaption syndrome of stress and on stress tolerance. The latter interpretation seems more probable. Both interpretations are supported by the correlation between fatigue, feelings of exhaustion and physical fitness.

Since the present investigations is a cross-section study it is difficult to say anything about causal links. Statistical analyses were made in order to ascertain that the correlations were not spurious. Logically the relationship between physical fitness and mental health can also be such that less stressed people are the most eager to keep up their physical fitness. This explanation is not theoretically very sound, however. In any case a longitudinal study would give a better opportunity for ascertaining the nature of this interesting relationship. The project has made plans to carry out a second survey with the same subjects after about five years, which would make it possible by means of retrospective enquiry to approach the follow-up design.

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5. SOCIALIZATION INTO THE SPORT INVOLVEMENT

In 1971 International Committee for the Sociology of Sport initiated a cross-national study of the socialization process pertaining to sport roles, with the University of Waterloo as the co-ordinating centre. The major objectives of the Leisure Role Socialization project are as follows:

1. To determine the degree of socialization into sport involvement.
2. To explain the process of socialization into sport involvement, as it applies to:
   a. the elite athlete
   b. the general population.
3. To determine whether the degree of socialization differs crossnationally.
4. To determine whether the process of socialization differs crossnationally.

Twelve countries have agreed to participate. Finland has participated into the project only partially. The Finnish research data concerning the elite athletes has been gathered using a questionnaire corresponding exactly to the instructions of international LRS project. The questionnaire was sent in 1975 to 117 track and field athletes of the Finnish national team and 108 Division I Finnish baseball players. These sports were selected to serve the purposes of the international study so that one represented an internationally widely spread sport culture and the other was representative of a typically national sport culture (in this case the Finnish variety of baseball).

For financial reasons the Finnish general population data in this project has been gathered one year earlier than in other countries. That is why the general population data is not internationally comparable. A random sample of 300 was drawn from people between ages 26-32 living in the town of Jyväskylä. In the first stage they were asked about their sport activities by means of a mailed questionnaire and in the second stage they were interviewed personally. By and large the method was same as used in the international study.

Lauri Laakso

SOME ASPECTS OF SOCIAL AND REGIONAL BACKGROUND OF FINNISH TOP-LEVEL TRACK AND FIELD ATHLETES AND BASEBALL PLAYERS

LRS International Workshop,
Cologne, 26 -30.9.1977

1. INTRODUCTION

The purpose of my report is to present shortly some preliminary results of the elite athletes in Finland. Because these results are only preliminary, I will not present any theoretical background for them; I only refer to the theoretical basis of the whole cross-national project on Leisure Role Socialization (LRS) (Kenyon & McPherson 1970). Instead of the presentation of the theoretical background, I have tried to choose the results so that they represent some international traits which are obviously difficult to understand without any knowledge about some specific national features of the sport culture in Finland. Secondly I have also tried to choose some findings which might be interesting also in other countries but which are too specific to to be analyzed in the connection of the whole project.

2. METHODS

The research data were gathered using a questionnaire corresponding exactly to the instructions of the international LRS project. The questionnaire was sent to 117 track and field athletes of the Finnish national team and to 108 Division I Finnish baseball-players in autumn 1975. The questionnaires were returned by 97 athletes (83 %) and 95 baseball-players (88 %). The Finnish variety of baseball, which presented the national sport in Finland, differs from national sport of other countries in a considerable way. It is practised only in Finland; consequently it has no international competition.

3. RESULTS

The consideration of the birthplace of elite athletes shows that there were differences whether they were born in town or in the country (Table 1). Track and field athletes had lived in the country at the age from 5 to 13 a little more often than baseball-players[1].

Thus there was no significantly great difference in the type of locality (urban vs. rural) of different athletes. But in the type of rural residence there were more interesting differences. Fifty-one per cent of male track and field athletes with rural background had lived in the open country and 49 per cent in villages, whereas 77 per cent of baseball-players with rural origin had lived in dense areas and only 27 per cent in the open country. The same phenomenon was also evident in the distance from childhood home to sports ground. Track and field athletes, who came more often than baseball-players from the open country, have also lived in a more longer distance from sports grounds. This can partly explain the choice between individual and team sports. However, it must be emphasized that Kiviaho (1973) has found out great regional differences in interest in various sport disciplines in Finland. This obviously implies that especially the choice of teamsport is also regulated by regional possibilities for participation. This assumption seemed to be substantial because regional characteristics proved to be in connection to the choice of Finnish baseball especially. A total

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[1] It is important to know that the interest basis in baseball differs from that of other ball games in Finland. Typical to other ball games is that the top teams are concentrated in urban areas, mainly in greater towns or cities, whereas the Division I baseball teams quite often come from smaller towns and even from the country. For example, the six greatest Finnish towns (Helsinki, Tampere, Turku, Espoo, Vantaa, Lahti) have had in Finnish baseball no team in the Division I for 4 years. (Helsinki will have one team in the next season.)

TABLE 1. Regional background of Finnish track and field athletes and baseball-players

	Track and field athletes (male) (N=72)	Baseball-players (N=95)	Track and field athletes (female) (N=25)
Birthplace (%)			
City or town	36	38	40
Country	64	62	60
	100	100	100
Where did you live from 5 to 13 years			
City or town	26	38	32
Country	74	62	68
	100	100	100
Type of country (5 to 13 years)	(N=53)	(N=59)	(N=17)
Open country	51	23	41
Village	49	77	59
	100	100	100
Distance from a sport field	(N=72)	(N=95)	(N=25)
Over 16 km	11	-	-
6-15 km	18	5	24
1- 5 km	42	54	56
Less than 1 km	29	41	20
	100	100	100
Birthplace (%)	(N=72)	(N=95)	(N=25)
Typical track and field commune	47	48	44
Typical baseball commune	22	63	24

of 63 per cent of the Finnish baseball-players were born in a commune which had at that time a baseball-team in the Division I. On the other hand, typical track and field communes did not seem to have such kind of relation with the sport-discipline-choice.

The same differences were indicated in the question of the event which the respondents had first participated in (Table 2.). Thirty-two per cent of the baseball-players had first participated in baseball games, whereas no male athlete and only 4 per cent of the female athletes had started their sports career with baseball.

TABLE 2. What sport did you first participate in (Finnish elite athletes)

	Track and field athletes (male) (N=59) %	Baseball-players (N=88) %	Track and field athletes (female) (N=23) %
Cross-country skiing	47	38	27
Track and field	42	22	57
Finnish baseball	-	32	4
Soccer	2	7	4
Others	9	1	8
	100	100	100

An interesting result was also that most Finnish male athletes and baseball-players had first taken part in cross-country skiing, which is very popular in Finland (especially in the country). The next popular sport had been the sport in which the respondents were competing at the time of the study: baseball by baseball-players and track and field by athletes. In the female athlete group even 57 per cent had first taken part in track and field and 22 per cent also in the baseball.

There were no great differences between the socio-economic background of different athletes (Table 3). Similarly the amount of children was on the same average level in different groups of athletes. However, there were some differences in education. Male track and field athletes were less educated, baseball-players somewhat more educated and female track and field athletes showed to be the most educated group.

The results concerning respondent's own occupation showed similar differences. Male athletes belonged to working class or farmers a little more often than baseball-players and there were more students among the latter. As much as 92 per cent of female athletes belonged to clerical or managerial occupations. On the basis of the results we can say that the sport-discipline choice of Finnish top-level athletes is determined more by regional than social and educational variables.

TABLE 3. Social background of Finnish track and field athletes and baseball-players

	Track and field (male) (N=72)	Baseball (N=95)	Track and field (female) (N=25)
Occupation of father (%)			
Professional or service occupation	28	31	32
Labourer	42	42	48
Farmer	30	27	20
	100	100	100
Amount of siblings			
Mean	3.4	3.0	3.0
Education			
Elementary level	55	38	28
Lower secondary level	17	25	16
Upper secondary or tertiary level	28	37	56
	100	100	100
Own occupation			
Professional or service occupation	46	46	60
Labourer	31	24	4
Farmer	6	2	4
Student	17	28	32
	100	100	100

However, social background seems to be related with internal differences of each sports group. In order to consider these differences, track and field athletes were divided into two groups: international elite (N=41) who had represented Finland in the European Championship of the Olympic Games and other members of the Finnish national team (N=56). Baseball-players were also divided into two groups: top-level players (N=36) and other Division I players (N=59). The criterion for the division was that the first mentioned players had been selected at least once to play in the prestigious East-Finland & West-Finland contest played at the end of each season.

The results indicated (Table 4) that male track and field athletes belonging to the international elite a little more often than others were born in the country. A similar result was found among the baseball-players, but neither of these differences were significant.

TABLE 4. Social background of Finnish track and field athletes and baseball players

	Track and field athletes (male)		Baseball-players		Track and field athletes (female)	
	International elite (N=32)	Others (N=40)	East-West players (N=36)	Other Div. I players (N=59)	International elite (N= 9)	Others (N=16)
Birthplace (%)						
City or town	28	42	31	42	56	31
Country	72	58	69	58	44	69
	100	100	100	100	100	100
Occupation of father (%)						
Professional of service occupation	26	30	31	30	22	38
Labourer	48	35	44	41	67	38
Farmer	26	35	25	29	11	24
	100	100	100	100	100	100
Number of siblings						
Mean	4.3	2.7	3.1	2.9	1.8	3.7
Education (%)						
Elementary level	78	38	56	27	11	37
Lower secondary level	6	24	22	27	22	13
Upper secondary or tertiary level	16	38	22	46	67	50
	100	100	100	100	100	100
Own occupation (%)						
Professional or service occupation	42	50	59	39	56	63
Labourer	45	20	25	24	11	-
Farmer	-	10	-	3	-	6
Student	13	20	16	34	33	31
	100	100	100	100	100	100

The distributions of fathers' occupations of baseball-players appeared fairly similar in the two groups. In the male track and field athlete group those belonging to the international elite more often than the rest came from working-class families. The difference was not significant, but the result is to be considered notable since these persons were usually born in the country and it could be expected that they would come from farming families.

Father's occupation and amount of children are assumed to be related. Thus it seems understandable that among the male track and field athletes the international elite came from families with more children compared with others. In the baseball-player group the difference was very small, yet in the same direction.

Combined country and working-class origin as well as the relatively large number of siblings may in part account for the lesser amount of education obtained by internationally succesful track and field athletes in comparison to other athletes. This difference was also significant ($p < .01$). Also in the baseball-player group top-players were significantly ($p < .05$) less educated than other players.

Differences in education are generally assumed to be reflected in the occupational distribution as well. Among the male track and field athlete group the international elite more often than the rest belonged to working-class and consequently relatively less often to the clerical and managerial class, to farmers or students. The difference was not, however, significant. In the baseball-player group there were no differences with the exception that there were more persons in the top-player group representing clerical and managerial occupations and less students than in other players' group. Since students, however, may be assumed subsequently to belong to these classes, the difference may be regarded as being mainly due to the classification system.

In the female track and field athlete group there are also some differences between elite and other athletes. Contrary to the male athlete group female track and field athletes belonging to the international elite were more often than others born in towns. The difference between these two groups regarding father's occupation was in the same direction as in the male athlete group, so the international elite more often than the rest came from working-class families.

But the situation was the reverse compared to the male group as regards education and amount of siblings. The female international elite athletes had fewer siblings than the rest and they had obtaines more education than the other athletes. Among the female athlete group no occupational differences were found for the reason that almost all female athletes appeared either to have clerical occupations or were students.

4. COMMENTS

The purpose of my report has been the presentation of some preliminary results of Finnish top-level athletes in a way which permits exploration of new approaches to use the research data. At least two approaches showed to be applicable at least on the basis of the Finnish data. First, regional variables proved useful for study of differences between sport groups. Considering this, especially regional distribution of Division I baseball-players appeared to explain socialization into baseball. Regional variables are of course connected with the character of physical culture in each country, but a sign of the explanative efficiently of these variables is, that alsc Rooney (1974) has previously found out regional differences in producing athletes for specific sports.

The second interesting problem was the difference in the social background of athletes representing different levels of performance. The present study did not attempt to explain these differences empirically but for furtherstudies it is possible to formulate hypotheses which might account for the differences.

Especially differences in education may be due to the fact that top-athletes at a relatively young age have started intensive training, when education among other concerns may have occupied a secondary place. However, when we take into account the unfavourable social background as a whole, it would be altogether a more likely explanation that these persons have striven to succeed as athletes for the very reason that their starting level has not afforded them equally good opportunities of success in other fields of life. That sport may have functioned as a medium of upward socialmobility (see e.g. Lüschen 1963) is implied by the fact there were not equally clear differences between the athletes' own occupations.

Among the Finnish baseball-players the differences were generally in the same line but smaller than among track and field athletes. This may be an indicator of a different nature of the game and of the fact that sport teams may be selective in terms of their recruitment and thus are more homogeneous in their social background. But the result may also be explained by the fact that due to the lack of international competition Finnish baseball cannot equally well be used as a means of fame and upward social mobility as the internationally widely spread track and field.

An interesting result is the differences between sexes, eventhough the small number of female athletes limited the possibilities of comparison. Although the international elite of track and field athletes both in the female and male groups generally came from the working-class, the female elite more often than others came from families with children, had received a better education and had a clerical occupation. The result is probable associated with women's position in the Finnish society so that women's opportunities of participation increase fastest among the educated women and this is reflected in sport in improved opportunities of training. On the contrary, the "degrees of freedom" of less educated women are, in this respect, clearly more limited and this is the essential difference when they are compared with less educated men. The result may also partly be explained by the cultural background, for a considerable part (56 %) of the female international elite belonged to the Swedish-speaking linguistic minority in Finland.

The present report has showed that the differences of the achievement level of athletes can be partly explained by variables describing social background and education. However, it is possible that also many other socialization variables can explain these differences and they may also give an explanation, how the social background effects

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6. TOP ATHLETICS AS CONTENT OF LIFE

The International Committee for Sport Sociology (ICSS) undertook as one of its tasks to make a survey of the social problems of out-standing athletes. It initiated in 1969 in eleven countries a survey in which the life career of athletes on top in 1956 was followed up. When international comparisons were still underway, the study was further extended nationally by gathering new data in 1972 and in 1975.

The national study "Top Athletics as Content of Life" was to carry out the following tasks:

1. Make a survey of the position of top athletics in the amateur athlete's life and of its relation to other activities of life.
2. Map potential conflict situations in different areas of athletes' lives and to examine them in relation to the dominance of sport.
3. Clarify the mechanisms by which athletes seek to solve emerging problems.
4. Utilize the acquired data in evaluating the personal and social significance of athletes' problems, and in examining ways and means of overcoming such problems in physical education.

This national study selected the following life functions for special analysis: school, study, occupation, family life, and leisure activities. These represent areas which have proved to be life functions in which social problems of top athletes in the top athletics of our time are most frequently experienced.

The theoretical framework selected to integrate research problems and to guide analyses was Festinger's (1946, 1957) theory of cognitive dissonance. The important starting point in this theory is a person's cognitive behaviour in a decision-making situation: that is, a choice has to be made between two or more alternatives. After the decision has been made the choice is re-examined. The more important the excluded alternatives are to the individual, the more unbalance or dissonance the decision-making situation causes, and the more actively the individual seeks to remove it through adapting his behaviour. In the problem situations included in the present study the theory can be interpreted so that when an athlete, because of sport, is forced to give up his goals in other central areas of life, he experiences dissonance which he attempts to reduce by behaving in a way which strengthens the decision made in favour of sport.

The population of the study was the most successful Finnish male athletes during the Olympic years of 1956, 1960, 1964, 1968, and 1972 who were called "top athletes". Within the concept "top athlete" were included:

1. Athletes who took part in the Olympic Games.
2. Finnish champions in the 21 events chosen for the study.
3. Members of the Finnish national team in football.
4. Players in the "East-West" contest in Finnish baseball.

The data were collected as a mail enquiry at the turn of 1972-73 with the help of central sport federations. The data were complemented in the spring, 1975, by sending to all athletes who had answered the first enquiry a detailed questionnaire which asked mainly about time spent on sport and other activities.

The final sample was 451 athletes in the second stage of the study, 182 being active at that point of time, and 269 having ended their athletic careers. Team sport was represented by 172 and individual sport by 279 athletes.

PAULI VUOLLE

TOP SPORT AS CONTENT OF LIFE

IV International Congress of ISSP,
Prague, 3-9.10.1977

1. BACKGROUND AND PURPOSE OF STUDY

In the history of the national physical culture in Finland top and competetive sport **has** occupied a prominent position. Due to rapid development of research during the last decade Finland is one of the leading countries of the world regarding the science of coaching. Research with its strongly biological orientation has, however, focussed mainly on finding out factors which contribute directly to the upgrading of athletes' performance capacity, while less attention has been given to the study of the athlete's personality and social context.

Behind sport there is always social life with its demands and requirements, and the athlete has to adjust or confront his sport goals with them. The most important social demands, social pressures and expectations concern such civic obligations as getting an education and training for an occupation, being gainfully employed, taking care of family duties and participating in the management of common social concerns. In addition to them, personal needs have to be against the demands of sport. A top athlete can thus encounter choice situations in which sport is contrasted with other alternative activities of life: should the latter be forgone, restricted or postponed? The more important functions of life are at stake, the more problematic the choice situation may become. Although sport points out the concrete objective to be sought, it cannot be final and lasting in amateur sport. When the sport career once is inevitably over, it may be difficult - even impossible - to go back to activities set aside because of sport.

The International Committee for Sport Sociology (ICSS) undertook as one of its tasks to make a survey of the social problems of top athletes. It initiated in 1969 in eleven countries a survey in which the life career of athletes on top in 1956 was followed up. When international comparisons were still underway, the study was extended nationally by gathering new data in 1972 and in 1975.

The national study "Top athletics as content of life" was to carry out the following tasks:

1. Make a survey of the position of the top athletics in the athlete's life and of its relation to other activities of life.
2. Map potential conflict situations in different areas of athletes' lives and to examine them in relation on the dominance of sport.
3. Clarify the mechanisms by which athletes seek to solve emerging problems.
4. Utilize the acquired data in assessing the personal and social significance of athletes' problems and in examining ways and means of overcoming such problems in physical education.

As life functions to be studied were selected school and studying occupational and family life and partly also other leisure activities. These represent areas, which have proved significant in earlier studies. At the same time they are life functions, in which the social problems of top athletes in the top athletics of our time are most frequently brought up.

2. THEORETICAL BACKGROUND AND FRAME OF REFERENCE

As a theoretical framework to integrate research problems and to guide analyses was used Festinger's (1946, 1957) theory of congitive dissonance. The starting point of this application of Heider's (1946, 1958) is a person's cognitive behavior in a decision-making situation, in which a choice has to be made between two or more alternatives. After the decision has been made the choice is re-examined. The more important the excluded alternatives are to the individual, the more unbalance or dissonance the decision-making situation causes and the more actively the individual seeks to remove it through adapting his behavior. In the problem situations included in the present study the teory can be interpreted so that when an athlete because of sport is forced to give up his goals in other central areas of life he experiences dissonance which he attempts to reduce by behaving in a way which strengthens the decision made in favour of sport. This chain of response is illustrated in Figure 1 in which the research process is outlined and the empirically established relationships are indicated by means of a solid line.

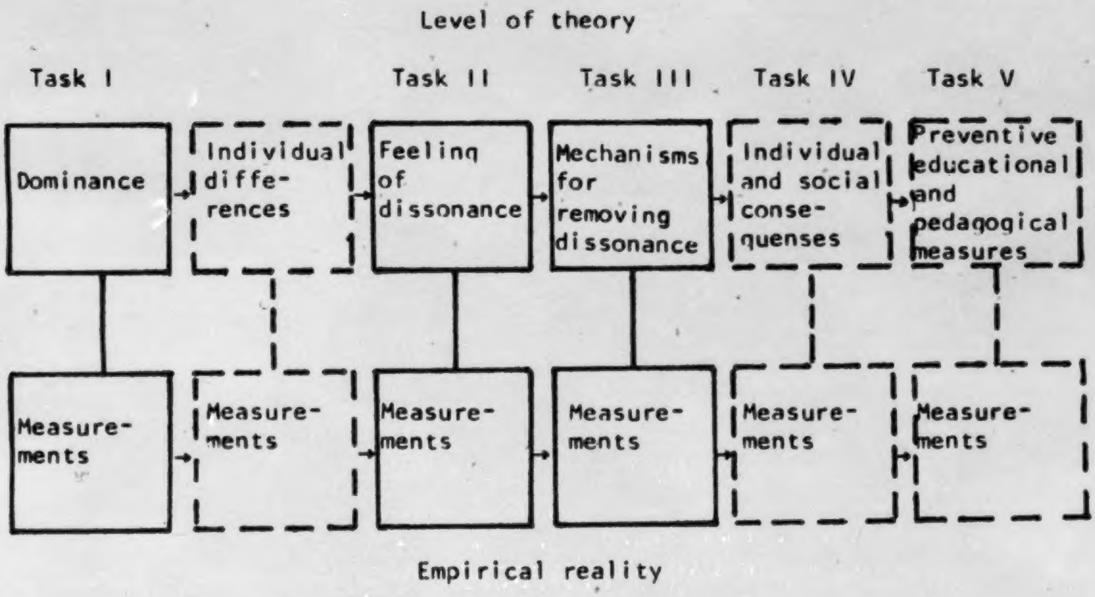

Level of theory
Task I
Task II
Task III
Task IV
Task V
Dominance
Individual diffe-rences
Feeling of dissonance
Mechanisms for removing dissonance
Individual and social conse-quenses
Preventive educational and pedagogical measures
Measure-ments
Measure-ments
Measure-ments
Measure-ments
Measure-ments
Measure-ments
Empirical reality

FIGURE 1. Origin, mechanisms of reducing and consequences of dissonance. (In the present study only those relationships are examined closer which are indicated by solid lines.)

3. METHODS

3.1. Population

The population of the study was the most successful Finnish male athletes during the Olympic years of 1956, 1960, 1964, 1968, and 1972, who were called "top athletes". The concept "top athlete" included:

1. Athletes who took part in the Olympic games.
2. Finnish champions in the 21 events chosen for the study.
3. Members of the Finnish national team in football.
4. Players in the "East-West" contest in Finnish baseball.

3.2. Procedure

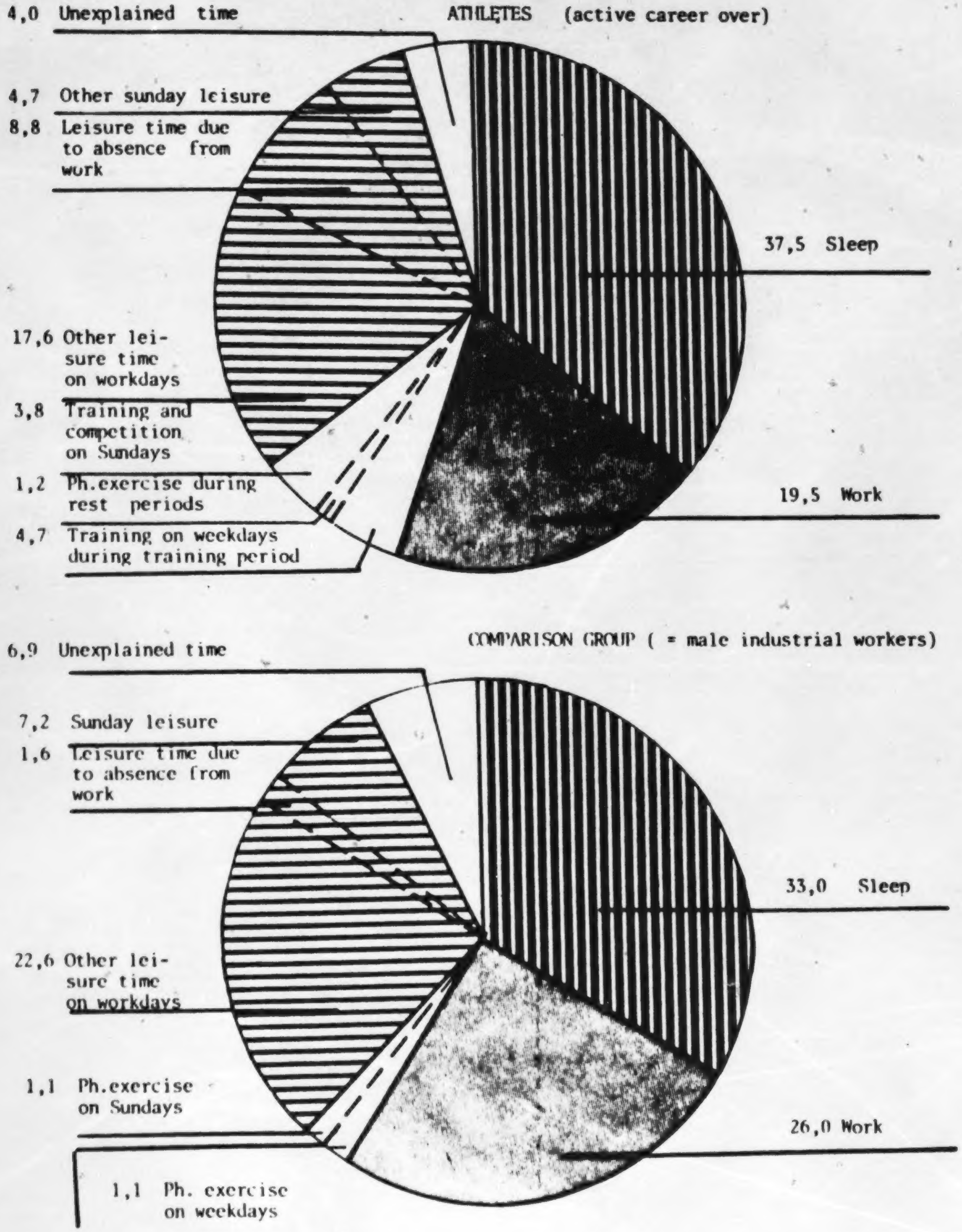
The data were collected as a mail enquiry at the turn of 1972-73 with the help of central sport federations. The data were complemented in spring 1975 by sending to all athletes who had answered the first enquiry of detailed questionnaire which asked mainly about time spent on sport and other activities.

The final sample was 451 athletes in the second stage of the study, 182 being active at that point of time and 269 having ended their athletic careers. Team sport was represented by 172 and individual sport by 279 athletes.

4. RESULTS

4.1. Dominance of sport

In athletes' lives work was the single most dominant activity during workdays and sport on Sundays. Although work dominated time expenditure on workdays, sport has such a prominent position in athletes' lives that these two functions combined can be considered to have accounted for an essential part of athletes' life content (Figure 2).



Absolute total time :13,2 year x 365 days/year x 24 hrs/day = 115632 hrs

FIGURE 2. Distribution of absolute and total time between different activities in per cent among athletes and the male industrial workers

Despite the fact that time spent of work had somewhat decreased and time spent on sport increased, the changes between 1956 and 1972 were small. It appears that the development of systems of coaching and competitions during the above mentioned period has not led to a quantitative increase of time expenditure but rather to a qualitative upgrading of coaching systems.

Although the active career of team athletes was longer than that of individual athletes, the differences in total time expenditure turned out to be small. The training and competition of team athletes was more strictly guided and controlled than that of individual athletes when control was assessed in terms of an athlete's freedom in making personal decisions and in the planning, implementation and follow-up of the training programme.

The description of time expenditure shows that during the period from 1956 to 1972 Finnish top athletes practised sport beside their work. According to the results they can be regarded as fairly pure amateurs if the question of amateurism is only examined in terms of time spent on work and on sport. This was true also with regard to the very top athletes.

In the athletes' system of values top athletics, schooling, occupation and family life were all highly regarded areas of life. During the peak period of athletic career sport had a clearly dominant position, even if less time was spent on it than on work.

4.2. Undesirable effects of sport on other spheres of life and mechanisms for their removal

The undesirable effects of sport were most clearly manifested in schooling and occupational life as dissatisfaction felt in these areas and as sacrifices made on account of sport. In other areas of social life the disadvantages due to sport were felt most distinctly in personal life. They were recognized most strongly as sacrifices in family life and vacationing.

Differences in the experience of disadvantages due to sport were small between active athletes and those whose active careers were over. Team athletes found them in their schooling somewhat more clearly than did individual athletes. The difference seems to be explained on the one hand by team athletes' tighter training commitment and by their better possibilities for recognizing disadvantages on account of their better educational background on the other.

As a general check against the emergence of problems can be regarded a sportcentred way of life, developed through a long period of socialization. In consequence of it athletes had built for themselves a system of life values in which the high estimation of sport functions as a "mental safeguard" against recognition of conflicts.

The possibility of combining occupational and athletic interests proved the most important mechanism for the prevention and removal of problems. At best, sport was instrumental in getting an occupation and one's occupation in turn offered good possibilities for practising sport during one's active athletic career.

The basis for the setting of research problems were the great changes in the structure and results of top athletics during the period from 1956 and 1972. The changes gave reason to assume that athletes actively engaged in training and competition during or close to that period had experienced the disadvantages in other spheres of life due to sport more strongly and extensively than had those athletes who had already ended their active careers. Although the results of the study show that coaching systems had become more effective along with improved training programmes and thus had to some extent increased susceptibility to disturbances, the changes by the beginning of the 1970's were small. It would appear that problems concerning the relationships between sport, schooling and family life had been managed so that they had not increased to any appreciable extent, let be that they had not decreased, either.

5. DISCUSSION

In evaluating the seriousness of the athletes' social problems on the basis of the obtained results, it can be concluded that the situation is by no means alarming. This does not mean, however, that society should not feel responsibility for top athletes and their education. Holding themselves mainly responsible for their lives athletes also had some expectations as to what sport leaders and society and to some extent also coaches should do for their schooling and occupation. Societal responsibility can be born even today without any extensive special measures and mainly in the form of prevention.

Direct preventive measures concerning athletes can be classified into guiding and supportive activities. The former means personal or group guidance. The objective is to give the athlete such information on the basis of which he can see the consequences of his choices and being conscious of them decide rationally between the alternatives of career choice. Supportive activities are more concrete than guidance and seek to create or improve possibilities for carrying out the activity in question. The most common form of support is giving financial aid to athletes. More commonly also vocational guidance and partly other schooling are integrated into the actual training programme.

Indirect supportive activities are means which indirectly contribute to the success of prevention This is a question of the pedagogical ability of persons specialized in the training of athletes including coaches, physical education teachers and sport leaders, in other words, of their ability to impart knowledge and guidance. This ability can be achieved by developing the schooling so that as the primary educational goal is set the acquisition of pedagogical abilities related to physical culture.

The picture yielded by the present study of the effects of sport on the lives of athletes is rather positive. This interpretation is limited, however, by the fact that the registering of disadvantages was based on the athletes' subjective opinions on these points. The results should be elaborated so that the study is extended to cover the environment and the interactions within which the athletes find themselves in different roles. In occupational life the study would focus on the athlete's work environment including work supervisors and fellow workers. Similarly, a thorough analysis of disadvantages in family life would presuppose hearing "the other party", in other words, what are athletes' wives' and children's views.

The structure of respondents is of crucial importante if we want to assess the individual and social significance of the obtained results. The population of the present study was those athletes who can be considered to have achieved their objectives in their athletic careers. Behind them are, however, numerous other athletes who have trained and sacrificed their lives for sport as much as the respondents without achieving similar success. In the lives of these athletes, who have failed in their athletic careers, the chances for problems are much greater than in the lives of those athletes who made it to the top. Only by taking into account the large numbers of athletes who have failed to achieve their objectives can we make a better evaluation of top athletics as the content of life and of its individual and social consequences. The study covered only male athletes. It would naturally be very important to extend it to cover also female athletes.

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7. INFORMATION SERVICE

The Information Service of the Research Institute of Physical Culture and Health was established on the initiative of the Ministry of Education in 1971. At present it functions in the library building of the University of Jyväskylä, has full access to library holdings, but does not belong to the administration of the university. The Jyväskylä University Library is the central library for psychology, behavioral sciences and sport sciences in Finland. However, one of the main tasks of the Information Service of the Research Institute is to take care of scientific information in sport sciences and physical education.

The functions of the Information Service are mainly structured according to national weigh points in sport sciences as set by a state body, and also on-going research projects are taken account of. Its functions can be grouped as follows.

1. Internal activity within the Institute, which is connected with the work of the Institute staff and, partly, that of researchers and teachers in the Faculty of Physical Education of the University. 2. National activity, which can include editing the report series of the Institute, publication exchange, editing three annual publications (bibliography of Finnish literature in sport sciences and physical education, selected abstracts of research reports, yearbook of the Institute), literature reviews in press, data documentation to some extent, research register, individual literature searches, contributions to publishing activity of some other bodies and teaching of the use of information sources in sport sciences and physical education. 3. International activity, which is mainly carried out allied with the functions of the International Association for Sports Information (ICSPE). 4. Service activity, which is connected with access to publications. At times, activities are rather closely related with certain on-going research projects or project planning.

Selected and directed literature searches, publishing of own newsletters and registration of research are the central activities.
Emphasis is laid on behavioral and social sciences within the dimensions of sport sciences. Quite many biomedical questions are intermediated to the national central library in medicine.
The staff of the Information Service is two persons permanently. Their work is mainly directed to researchers, teachers and advanced students. Other students are guided by the library personnel. However, there can be close co-operation between the staff of the Information Service of the Institute and that of the University Library when needed. Consequently we can say that the size of the Information Service's staff is potentially more than two persons.
The Information Service of the Institute differs from some other Finnish institutes which handle secondary scientific information. The University Library provides collective services for all students and also for teachers and researchers to a great extent, whereas the services of the Information Service of the Institute are more individual, selected and provided for more strictly defined target groups, like for the personnel of a certain research team. Another major institute or organization is the Finnish Society for Research in Sports and Physical Education, which is resident in Helsinki. It also provides mainly collective services like seminars on certain current topics and includes seminar reports in its publication series. It does not carry out systematic registration of research or selected literature searches as such, although it is a channel of state funds for some documentation and information outputs of some other institute, e.g. the Information Service of the Research Institute.
At present, the Information Service of the Research Institute of Physical Culture and Public Health is the only broad-scale national information body, which mainly deals with secondary information, for sports sciences. Its international functions and possibilities are based on the structure of national activity of the Information Service.

The most important international relations belong to the activity of the International Association for Sports Information and, more specifically, to its working commission "Kommission Informationsmittel. The Information Service also follows the development of the European Inventory of ongoing research projects by the Council of Europe.

Timo Haajanen & Maaret Veistola

INSTRUCTION IN THE USE OF INFORMATION SOURCES:
Faculty of Physical Education

VI International Congress for Sports Information,
Duisburg-Wedau, 31.5.-4.6.1977

1. WHY INSTRUCTION IN THE USE OF INFORMATION SOURCES?

The importance of the diffusion of information becomes more and more evident daily. Since the functions of scientific libraries are closely connected with the dissemination of information on research results, it is important that more emphasis and time at all levels of studies is given to the ability to use library services effectively. In addition to basic studies, familiarity with the methods of finding information is especially important for in-service studies: change of occupational functions and updating of knowledge make it necessary to keep up with the development of one's field of activity. The position of education in society is getting more prominent in general, which means that each person has both the right and duty to participate in continuous in-service education. The knowledge and skills acquired in basic education are not sufficient but must be constantly updated and upgraded.

In the future the teacher's work is likely to contain more planning, providing stimuli to students and working with different groups. Physical education teachers also need continuous mental reconstruction - new stimuli and material for thinking in order to be able to act creatively. In teacher's work there is a risk of becoming isolated and losing touch with the development of his own field. This is harmful not only to teaching and student development but also to the teacher's mental health. For this reason, study programmes should also include instruction in the knowledge and skills of knowledge acquisition.

Let us take one example to illustrate how students' pool of knowledge "grows" during the basic education and how problematic the "amount of knowledge" can be. A study was carried out in 1970 (Diessner 1974) to show the development of students' physical performance capacity, ability of demonstration and knowledge of the movements and methodological development of different sport events, ability to describe movements verbally as well as ability to analyze movement. The percentage of correct answers on knowledge tests taken each year varied as follows: 1st year 58%, 2nd year 73%, 3rd year 64% and 4th year 61%. Without any deep-going analysis, it seems obvious that the study indicates the need of in-service education in indirect way, as the results may be taken to be a measure of the degree of knowledge acquisition.

The following discussion deals with instruction in the utilization of information sources in the training of physical education teachers and in the degree programme reform of the Faculty of Physical and Health Education, University of Jyväskylä.

2. PRESENT SITUATION IN THE FACULTY OF PHYSICAL AND HEALTH EDUCATION

The new students of physical education are given some instruction in the use of the library and literature. At the beginning of the first year the library arranges a demonstration, during which the students are shown a set of slides illustrating the use of the library and made familiar with the facilities and services of the library. Instruction in the utilization of information sources given during the second year is incorporated into the course of knowledge acquisition and application of research methods, which is made up of lectures (14 hrs) and seminar work (24 hrs). With regard to knowledge acquisition the objective of the course is to facilitate the acquisition, internalization and application of available knowledge and the more concrete objective is to present the available methods of knowledge acquisition and utilization and modern information service systems. The amount of time devoted to the use of library services is 2 hours of lectures and 2 hours of demonstration of information sources. Students are also given some exercises as assignments.

The university library staff has taken care of the lecture and the presentation of information sources, the faculty staff has been responsible for the guidance of applications. In the seminar the students are required to prepare a literature survey on given topics, which is designed to make them able to apply the new knowledge acquired.

At later stages of studies instruction in the use of information sources has been given in seminars, but the quality and quantity of instructions has varied considerably, since it has been entirely to each instructor to decide how to do it. Altogether, instruction in the use of information sources has been limited and unsystematic and can surely be considered inadequate in view of the needs encountered by students when they enter the various occupations.

3. OBJECTIVES OF INSTRUCTION

According to plans concerning the degree programme reforms the studies of knowledge acquisition will be included in the general studies common to all students of the faculty. The purpose of such studies will be

- to familiarize the students with the main libraries and information centres of his own field and to make him able to use their services
- to make the students able to find the literature needed for the solution of given problems, which presupposes that they know how to search for information and how to use information sources
- instruct the students in the methods of collecting and utilization of written material.

4. RELATING STUDIES OF KNOWLEDGE ACQUISITION TO OTHER STUDIES

According to plans, teaching of the principles and methods of knowledge acquisition will be given at three stages. As before, there will be a guided tour of the library (2-3 hrs) at the beginning of first year studies. This first stage would only give broad outlines and specific details would be omitted, because there is at this stage relatively little need for using information sources. The information session should be motivating introduction to the use of the library and encourage students to use available services actively and effectively.

During the second or third year, in connection with the writing of the first paper thesis, a course of information technique will be arranged, which in line with the practice of some other faculties will include 6 hours of lectures and 6 hours of practise. When the students have progressed further with their studies, there will be a more thorough and specific presentation of the methods of knowledge acquisition (probably 2-4 hrs). All instruction will be given at a time when the students have the occasion to use information acquisition skills, which usually means seminar work. Instruction will be given by the library, faculty staff and tutors.

The course on information technique will probably be organized after the model currently applied in some faculties. The lectures have contained the following topics: (1) Introduction: quantity and need of scientific knowledge; science policy administration and information policy in Finland; information services network in the branch of science in question; (2) Types of libraries and information service, (3) Utilization of libarary and literature; library service functions; holdings and catalogues; classification and indexing, (4) Sources of information: primary, secondary and tertiary, (5) Bibliographical references, reference rules, disposition of paper, summary, abstract, (6) Information service: its functions; Finnish information services; foreign information service centers, (7) Computer-based information systems: those available in Skandinavia; other relevant data-bases; important points in computer-based literature searches; methods of searching (off-line, on-line); computer output and acquisition of references.

During the demonstrations stage the most important information sources are presented and their use is practised. Practice in the use of library services is also given. Students are also given assignment to be done on their own time.

In addition to the cognitive objectives the course on information technique should take account of the affective side: it is important that the students are interested in available services and find them satisfactory and relevant to their needs from the viewpoint of the theoretical and practical concerns of their studies and future work.

5. IN-SERVICE TRAINING AND EDUCATIONAL TECHNOLOGY

The demands set on teaching have during the last ten years changed so much that two-thirds of all teachers should at all times be getting their knowledge up-to-date. In this situation it would be odd if the means of instructional technology were not used.

1) There should be created a system of in-service training based on the principle of mass communication, because there is not a sufficient number of teachers for all teachers' in-service education. Resources for in-service teaching for physical educators are one of the exceptions, however, because there seems to be enough teaching staff. Therefore, the planning should be strengthened for periodical free years of studies between teaching years.
2) In-service programmes should be built after target populations carefully defined. Teachers must be consulted and training programmes can be constructed using the principles of programmed teaching and other methods of instructional technology.
3) The concrete applications of instructional technology should be emphasized in the basic education of teachers.
4) Effective methods of using the available AV-equipment should be developed (tape recorder, overhead projector, etc.). Also effective material suitable for AV-teaching should be developed. The availability of carefully prepared materials would improve the use of AV equipment and link their use better with the objectives of teaching.

The abovementioned principles would increase the probability of an effective diffusion of new knowledge and should, therefore, be the starting point of reforms of educational technology (Suortti 1975).

6. PROBLEM-ORIENTATION AND PRODUCTIVITY IN THE DEGREE PROGRAMME REFORM

Courses on information technique naturally do not alone constitute an adequate teaching unit of knowledge acquisition. This is closely linked with the development of productivity and problem solving skills, which should be fostered in all university teaching. A study (Tiainen 1976), carried out at the University of Jyväskylä, concerning the effect of a one-semester training programme on the development of physical education students' idea generation, planning and evaluation skills showed that the time was too short: the students learned to produce a number of answers to idea generation questions but the effect on planning and evaluation skills was slight. The results of the experiment point out that there is a need to emphasize goal-orientation and problem orientation in the degree programme reform, to increase project work and to divide studies into shorter and more concentrated periods of study units. Written study materials should be complemented with video and film material.

The reform of higher education presupposes more effective teaching methods. This is partly due to lack of adequate teacher resources in general and to the deficiences of the lecturing method. The reform of higher education will aim at combining the needs to produce better professional qualifications and at the same time to improve the scientific level of studies. This is a difficult task and cannot be reached unless the effectiveness of teaching increases. The amount of lectures should be cut and students should be offered more material for independent work with clearly defined objectives. Although the structure of teaching programmes is an important matter, some studies seem to indicate that the increasing of study time does not per se guarantee the improvement of learning outcomes. Important factors are also the revision of teaching materials, a better co-ordination between different subjects and a clear definition of objectives and contents.

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